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A Century in Arrears*

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EXACTLY one hundred years ago the Poor Law Commissioners of England recommended that the Poor Law Act should be so amended as to provide for expenses which resulted from disease by which the poor were reduced to destitution. The Commissioners stated: "In general, all epidemics and all infectious diseases are attended with charges, immediate and ultimate, on the poor rates. Laborers are suddenly thrown by infectious diseases into a state of destitution, for which immediate relief must be given." They further recognized that "The amount of burdens thus produced is frequently so great as to render it good economy on the part of the administrators of the poor laws to incur charges for *preventing* the evils . . ."

Thus a century ago, as Sir John Simon accurately phrased it, "Health necessarily began to take rank as an object of practical politics." No one reading the history of English sanitary institutions can escape the conclusion, however, that the practical acceptance of this axiom was beset with continuing difficulties. During the past century of public health progress in England and in this country the same heated contests have always been waged, as to the pace at which and the method by which the public health should be conserved. Tacit acceptance of principles has rarely if ever been paralleled with equally prompt initiation of action. The "How" and the "How Fast" of all public health procedures have always been the stumbling blocks in providing people with the full benefits of available scientific knowledge.

Since these two controlling brakes upon public and private activity characterize all advances in the public health field, it appeared profitable to your incoming President to evaluate the "friction" possibilities of these brakes in the various fields of public health activity during the next few years. How successful these devices for slowing up fruitful application of science have been during the past 100 years is probably already known to most of you. In July, 1938, the United States Govern-

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ment semi-officially and tentatively recognized and gave position to the ancient axiom that without health there is no wealth. Although the truism is approximately centuries old, its rediscovery in this country 100 years after its revival of recognition in England is important if it will carry us over " the ridge of the hill " to successful initiation of universal public health service. If, however, the rediscovery of an old and accepted principle is to lead to crimination and recrimination, to emphasis upon terminology, to confused battling about communism, local autonomy, dictatorships, local and central responsibility, and other important but not always relevant symbols of the times, then another century may pass before true and realistic acceptance of the principles of 1838 is to bear fruit.

Competent political scientists will no doubt point out that 100 years represent a short time in the evolution of technics of government. And if we use the historians' device of compressing the time scale perhaps a million fold, then it was only an hour ago that the Poor Law Commissioners emphasized the economic importance of disease and insisted that provision be made in the poor laws for the recognition of this fact. It was less than a second ago, too, that one of our most authoritative national associations gave official recognition to similar axiomatic principles.

To those impatient to provide the indigent and the middle class with adequate medical service and satisfactory hospitalization, and communities an opportunity to attain a reasonable level of public health service, the answer that the concept, without health there is no wealth, was recognized geologically only a few minutes ago, offers little solace and really no practical advantage. Philosophically we may believe that time will cure all evils, but in current operations " When " and " How " must become controlling issues for all of us.

THE FIELDS OF ACTION

It is generally agreed that the nation's health is in an unsatisfactory condition. It is probably further agreed that the primary causes of this unsatisfactory situation may be encompassed in something like the following four major defects:

1. The poor environment in which the great mass of the population is living and the inadequate control, even at this date, of the physical environment of the people
2. A relatively incomplete dietary
3. Defects in the organization of public health and medical services
4. Gaps in the knowledge of the causation and prevention of disease, and imperfect application of such knowledge as is available

The elimination or correction of the defects enumerated above by the sudden arrival of an economic millennium appeals to the imagination only at first thought. A keen observer of the American scene remarked at the National Health Conference in Washington, that " the fundamental needs of mankind are food, fuel, clothing, shelter, and a job, and medical care and dental care must always be subservient to those main human needs. Let us concern ourselves first with that question of food, fuel, clothing, shelter, and a job with adequate wages." He was stating only a half truth in the enthusiasm of the attack of the moment. No one doubts that the abolition of poverty and the complete institution of sanitary methods and immunization will still leave much ill health and disease with the rich and with the poor. Economic improvement is devoutly to be prayed for. It may be prophesied, however, that there will still be with us the malignant tumors, the appendicitises, the gastric ulcers, the chronic rheumatisms, the diseases of the cardiovascular system and of the kidneys, the diabetes, and others, which will continue to plague mankind, rich or poor, and will still demand public health and

hospital service and the family doctor in the future as at present.

Since the economic millennium is still around the corner and is not due for imminent arrival, much still remains for the public health officer and physician to do. Let us review briefly the fields of action which must confront the country during the next few years. In which of these should our maximum efforts be concentrated, and to which can this Association make its most valuable and prompt contribution?

ENVIRONMENT AND FOOD SUPPLY

Fortunately no one seriously controverts the desirability of maintaining and developing the environmental protective services directed toward general sanitation, pure water and food supply, good housing, and the control of infectious diseases. Great amounts of work remain to be done in the entire field of environmental sanitation. Millions of homes of inadequate character must be replaced. Little if anything has been done to deal with the evils of atmospheric smoke pollution. Noise increases while knowledge regarding its correction and its effects remains limited. Although thousands of bodies, official and private, exist for the control and distribution of supplies of water and the elimination of sewage, no national plan of comprehensive character has yet been completely formulated. In the field of industrial hygiene opportunities of incalculable extent lie untouched for the engineer, the physician, the nurse, and the chemist.

Man accepts the importance of these activities, however, because upon their successful accomplishment civilization rests. Argument may continue as to method and as to cost, but few if any are ready to eliminate or to fail to extend those services without which no modern community can survive. I give little time to it this evening, not because of its lesser importance, but because of its universal and better recognition by both professional and layman.

Similar reflections may properly be made with respect to raising the level of food consumption and of improving dietary deficiencies of the population both young and old. Here, too, debate has moved from the realm of "How fast" to the "How," within the limits of existing scientific information. No acrimonious debate meets the proposal that children should be furnished with an adequate amount of properly balanced foods. The debate centers, rather, upon the procedure of obtaining the foods and of educating the public to their intelligent use.

DEFECTS IN THE ORGANIZATION OF THE PUBLIC HEALTH AND MEDICAL SERVICES

The key to the problem of the organization of public health and medical services lies in the simple fact that, "notwithstanding great advances in medicine and public health protection, the American people are not so healthy as they have a right to be." Statistical demonstration of this fact is by this time reasonably agreed upon. At least no important criticism of this particular phase has appeared on the public health horizon. Almost everybody agrees that millions of American people are suffering from disease and that probably over a hundred thousand of them die each year from preventable causes.

Some three years ago the late Edgar Sydenstricker summarized these facts perhaps more dramatically than has since been done. I am taking the liberty of referring in some detail to one of his last public addresses in 1935. He then said:

> The ravages of typhoid fever, diphtheria, and smallpox have been enormously lessened; they ought to be and can be eradicated. The infant death rate has been cut in half in the last quarter century, but it can again be cut

in half. Mortality from tuberculosis has been reduced by 60 per cent since 1900, and could be halved again. Two-thirds of the annual thirteen thousand maternal deaths are unnecessary. At least three-fourths of a million cases of syphilis are clinically recognized annually, but more than half of these do not obtain treatment at that stage of the disease when the possibility of cure is greatest. We have been rather vociferous in recent years over the health and welfare of children; yet it is estimated that 300,000 are crippled, a million or more are tuberculous, and nearly half a million have heart damages or defects.

The mortality of adults of middle or older ages has not appreciably diminished. The expectation of length of life at forty is about the same now as it was in 1850, 1890, or 1900. The mortality of adults who should be in their physical prime—20–44 years of age—is almost as great as that of the younger group, which includes babies and children. The mortality of persons who ought to be in full mental vigor and still capable of many kinds of physical work is over three times that of the younger adults. In the young adult ages—20–34 years—tuberculosis still tops the list as a disease; accidents and homicides snuff out about one life in a thousand annually; organic heart disease appears in even this young age period as the third most important cause of death. All careful studies of illness and physical impairments corroborate these ghastly records; in fact, they reveal even more impressively than mortality statistics the extent to which the vitality of the population is damaged in the most efficient period of life. This disconcerting evidence of impaired efficiency among our adult population takes on a graver significance in view of the changing age of our adult population. We can no longer squander the vitality of our grown men and women. The task of health conservation in the future must be broadened to include adults as well as children.

This appalling indictment of the state of the health of the Union is unfortunately only part of the story. The findings of the Interdepartmental Committee of the United States Government extend this indictment in even more distressing terms. Only a few of the more important conclusions of this committee are here presented. They round out one of the most serious and comprehensive attacks on our national public health deficiencies which have been made available in the history of this country. Their disclosures—still uncontroverted—show that even today, generations after Disraeli, the first statesman to demand it, public health has not yet been made the first concern of the State. If anything, it remains a tenth-rate power in the competition for position in the governmental sun. Some of these findings are listed briefly below:

a. Fifty million Americans are in families receiving less than $1,000 income a year.

b. For the ten most deadly diseases, the death rate is almost twice as high among unskilled workers as among professional workers.

c. The gross sickness and mortality rates of the poor of our large cities are as high today as they were for the nation as a whole half a century ago.

d. No physicians' care is received in 28 per cent of seriously disabling illness among the belt of normally self-sustaining families just above the relief level.

e. In the case of disabling illness lasting a week or more, one person out of four receives no medical care whatever among 20 million people in the relief groups, or among the 20 million people above that level who can purchase it only at risk of curtailing food, clothing, shelter or other essentials of health and decency.

f. Over 40 per cent of the counties in the United States do not contain a registered general hospital to serve their total of 17 million people.

g. There are counties in the United States where for a 5 year period there were no maternal deaths; there are others where the maternal death rate is more than 200 for each 10,000 children born.

h. In 1936, nearly a quarter of a million women did not have the advantage of a physician's care at the time of delivery.

i. For the great majority of the million births attended each year in the home by a physician, there is no qualified nurse to aid in caring for mother and baby.

j. One-third of the 35 million children under 15 years of age in the United States belong in families able to pay but little for medical care.

k. Every year 70 million sick persons lose more than one billion days from work.

l. Workers in industry have a life expectancy approximately 8 years less than non-industrial workers.

m. For respiratory tuberculosis, the death rate among unskilled workers is seven times as high as for professional workers.

n. In twenty-seven iron and steel towns, the death rate from pneumonia is two-thirds greater than in the United States as a whole.

o. A million workers are exposed to the hazards of silicosis.

p. Health supervision is inadequate in most industrial plants employing 500 or less workers, yet these represent some 62 per cent of the working population.

q. On the average day of the year, there are 4 million or more persons who are temporarily or permanently disabled by illness—unable to work, attend school, or pursue their customary activities.

r. Among gainful workers, there are on the average probably 7 to 10 days of sickness disability—in the course of a year—but these disabilities range from a day, a month, a year, to a lifetime.

CONTROLLING PRINCIPLES AND PROGRAM

Since no one has seriously challenged the statements of need so far presented, we may profitably pass to the more important controlling principles of action which should result from the statements of need. Fortunately, within a few seconds, upon the basis of the Gargantuan calendar of geologic time, equally universal agreement has apparently been reached in the United States on the controlling principles of action. Even at the risk of minor error, these agreed principles are re-stated here in the briefest possible terms. They are:

1. The extension and modernization of public health services.

2. The strengthening of attack upon four great threats to life: tuberculosis, venereal diseases, malaria and certain occupational hazards.

3. The reduction of deaths from pneumonia and cancer.

4. The reduction of morbidity from mental disorders.

5. The expansion of maternal and child health services.

6. The expansion of general hospital facilities where need exists and the extension of the use of existing hospital facilities.

7. The recognition of the principle that the complete medical care of the indigent is a responsibility of the community, medical and allied professions, and that such care should be organized by local governmental units, supported by tax funds and stimulated and coördinated by the federal government.

8. The provision of minimum medical services to 20 million additional people close to the emergency level.

9. The rôle of the federal government should be principally that of giving financial and technical aid to the states in their development of sound programs through procedures largely of their own choice.

10. The extension of the principle of hospital service insurance.

11. The development of voluntary or compulsory health insurance to meet the costs of emergency or prolonged illness.

12. The development of programs of insurance against loss of wages during sickness.

13. The further development of our public health and medical service should rest largely upon the members of the medical profession.

COST

The cost of accomplishing these objectives is in the neighborhood of $850,000,000 annually. Today, the people of the United States expend approximately 3¼ billion dollars annually for health services. The individuals pay approximately 80 per cent of this cost direct, while government pays 16, philanthropy 2, and industry 2 per cent. The new program, therefore, based upon an agreed platform, need not entail additional expenditures by the people of the United States. They require, on the contrary, a more intelligent and logical completion, unification, and coördination of health and medical services upon a nation-wide base. These in turn will require new channels for old expenditures, with new objectives re-defined and strengthened by public, private, and voluntary action.

THE RÔLE OF THE A.P.H.A.

For the first time in our history, therefore, all forces have agreed upon an expansion of public health and medical activity, upon the principles which should control it, and upon the probable

costs involved. This general agreement, however, by no means eliminates the necessity for hard thinking. What we like to call the details of execution and of administration, in this sphere of action as in others, still remain the rocks upon which the program may founder.

Public health now enters seriously for the first time the field of competition with other governmental activities. We want it to become a "first rate power" whose aim, unlike that of some other "first rate powers," is to save rather than to destroy lives. If it succeeds it becomes at once a competitor of the ancient and powerful consumers of public and private funds—armaments, highways, flood control, navigation, general education, etc. What position should the advocates of public health expansion take in this competition for public funds? How should this field of endeavor be adequately integrated with other important and necessary spheres of governmental activity?

In the second place, what balance of power, both in initiation and in current administration, should be maintained between local and central government? What shall be the relationship of private medical practice to public health service? Rigid attention to the detail of safeguarding the quality not only of medical service but of general public health service, is essential if we are to avoid the crystallization into "accepted practice" of the less efficient methods of present practice or even an increase of the total amount of illness of real or imagined character.

The obvious economic risks attached to various forms of compulsory health insurance should not be lost sight of and certainly should be made the subject of rigid economic inquiry.

The sheer problem of integration of various public and private forces is one to give us all pause, but it should be remembered that many of these problems assume immeasurable difficulties on paper, while their administration in fact goes on around us. One observer has already pointed out, for example, that if one were to list the necessary governmental and private activities essential for daily existence on Manhattan Island, he would be forced to conclude that such an organization of society is too complicated for successful accomplishment. The fact remains, however, that Manhattan Island lives successfully and regularly and with low death rates and other amenities which may well match or surpass those of the simplest village of 200 persons.

We should not permit our fears of difficult and complicated administrative action, therefore, to sap the courage necessary to embark upon a new program of advantage to the people of this country if the facts justify the desire. This road to new accomplishment may properly be travelled with the past fresh in mind, namely, that the methods of central governmental control may not always turn out to be the short and ready road to desirable reforms. But neither should these methods always be interpreted as leading directly and rapidly to the devil. The essential condition for effective local government lies in the force of local intelligence and will. In the creation of that force a wise and stimulating central government may play an important if not dominant rôle. No one discounts the difficult problem experienced by a Chadwick a hundred years ago of finding in local government politics the happy mean between the "too much" and the "too little" of central interference. While we are on that search it cannot be forgotten that the people must be served with the most intelligent use of the tools at hand. Offering a protest and nothing more may demonstrate a "liberal temperament," but a plan is essential to satisfy a people.

Your incoming President assumes that the American Public Health Association unites in a protest against inadequate service, agrees on a plan and will take a position promptly in crystallizing the details of that plan and in contributing its advice to the development of a structure permanently designed to supply the people of this country with reasonably adequate public health, medical and hospital service. To implement these purposes, the speaker tonight proposes that the Association undertake a series of duties which will demonstrate its faith in the plan and its desire to prove its workability. These proposals for action are:

1. That the Association adopt in principle the concept of public health responsibility set forth by Sydenstricker in the following terms:

"Society has a basic responsibility for assuring, to all of its members, healthful conditions of housing and living, a reasonable degree of economic security, proper facilities for curative and preventive medicine and adequate medical care—in fact, the control, so far as means are known to science, of all of the environmental factors that affect physical and mental well-being."

2. That the Executive Board appoint a committee of seven of the outstanding leaders of thought in the Association to coöperate during the coming year with the Inter-Departmental Committee of the United States Government, with the American Medical Association, and with the Conference of State and Territorial Health Officers, to study and agree upon a practicable plan for putting into effect without delay the major recommendations presented at the National Health Conference of 1938.

3. That the Executive Board develop in the immediate future,

a. A re-statement of national health policy and of the objectives of the American Public Health Association in relation thereto.

b. An evaluation of state and local health department organization in order to determine what future adjustments in major machinery of these institutions are essential to develop most efficiently the objectives of the National Health Policy.

c. A plan for coördinating, unifying, and completing the agencies on a national level for the most satisfactory development of adequate health services.

d. A study of guiding principles which should control the grant-in-aid procedure of the federal government, with particular reference to the long and varied experience of the central governments in England, Canada, Australia, and the United States.

e. An authoritative statement on the various private and compulsory health insurance plans now available or in use which may serve as guides for experimentation in various areas of the United States.

f. An evaluation of the relationship which public health activities should bear to other important public undertakings, such as welfare, education, and so on, so that a more reasonable balance of governmental activity may be maintained within the limits of appropriation of funds in the various areas of the country.

The Association for a great many years has made important contributions to the field of administrative practice. It has before it at this time perhaps the most important contribution which it has ever been called upon to make. It is one in which administrative standards and structures are the key stones to a successful future edifice of health administration. To this task, the Association should dedicate itself.

For many years, we have preached that "Public Health is Purchaseable." The public at last seems willing to buy it. The Association must adequately define the terms of the bill of sale so that a willing buyer, the American people, may taste more completely of the fruits of science in the promotion and maintenance of positive health.

The Health of the Nation*

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IN discussing public health in the United States it is tempting to dwell upon past accomplishments. It is pleasant to point with pride to the lowest general mortality on record; to a further decline in the tuberculosis rate, now less than 50 per 100,000; to a continually lower infant mortality and a significant reduction in the mortality of women during childbirth, which is 15 per cent lower this year than last. Similar satisfaction could be taken in the low level of death rates from typhoid fever, diphtheria, and many other preventable causes. Such rates, however, are based upon past records and compared with death rates of earlier days. If medical science were static, past records would be a useful yardstick. Medical science, however, is not static. Almost every year additions are made to scientific knowledge which make it possible for us to do more than previously was possible in the prevention of disease. Many tools for better health are being forged in our scientific laboratories.

There is every reason why we should accomplish more now than in the past. Moreover, an awakening public sentiment and the increasing interest of doctors in disease prevention as well as cure, make it possible for us to do far more than has yet been done in putting medical science to work for all of the people. Sickness and death rates of previous years, therefore, are inadequate yardsticks for the present and are utterly useless as goals for the future. Public health is a dynamic science. The horizon of knowledge is being extended year by year. Our plans for its application should embrace not only the knowledge we now have but should forecast the inevitable accretions to knowledge which year by year are making it possible to prevent deaths now considered inevitable.

The first large scale effort to shorten the lag between what we know and what we do, came in the provisions of the Social Security Act. Experience has shown that the basic plan of federal-state coöperation for health work was soundly conceived. In most states and communities it has been effectively administered. It has been possible to allot a ponderance of federal funds to those states and communities with the most meager financial resources but with the most urgent health problems. It has been possible to insist upon qualified public health personnel. The number of counties under the direction of whole-time health officers has been increased by 96 per cent. Federal funds have served to stimulate state and local appropriations. New funds from these sources exceed $8,000,000. Vital services of state health departments have been strengthened. For the first time, a number of states have begun to provide for in-

* Read at a General Session of the American Public Health Association at the Sixty-seventh Annual Meeting in Kansas City, Mo., October 25, 1938.

dustrial hygiene as a health activity. Emergency federal funds have provided sanitation, better water supplies, treatment of sewage, and malaria drainage. Greater progress has been made in public health during the past two years than in any similar period in our history.

One of the most important results of federal aid to health has been in the training of public health personnel. More than 3,000 health officers, nurses, laboratory directors, and other professional and technical personnel have been trained with Social Security funds.

During the past two years, also, we have seen two important additions to federal statutes relating to health. The National Cancer Institute was created by an Act of Congress last year and authorized to conduct studies relating to this disease; to promote coördination of similar studies conducted by other agencies; to procure and lend radium to research and treatment centers; to provide research fellowships and train cancer specialists; to coöperate with state health agencies in the prevention and control of cancer. The Act provides also for the useful application of research results with a view to developing the widespread use of most effective methods of prevention, diagnosis, and treatment of cancer. A building is under construction to house the Institute as a part of the National Institute of Health group, and an appropriation of $400,000 is available this year for carrying out the purposes of the law.

For this fiscal year, funds are available to assist the campaign against venereal diseases. The Venereal Disease Control Act, passed May 24, 1938, authorizes coöperation of the states for the prevention and control of these diseases and studies by the Public Health Service to develop more effective methods. Appropriations authorized for the next fiscal year are $5,000,000, for the succeeding year $7,000,000 and for the next ten years such amounts as the Congress may deem necessary to carry out the purposes of the Act.

Perhaps the most significant progress during the past two years, however, has not been in terms of legislation, nor yet in terms of actual public health accomplishment, but in the development and presentation to the country of a far-reaching national health program designed to deal in a comprehensive way with the whole problem of health and medical care.

Two years ago in "Reporting Progress" I discussed with you the health services made possible by the Social Security Act. Last year Assistant Secretary Roche in a historic address summarized the findings of the National Health Survey; documented the long known fact that the sick are poor and the poor are sick; added conclusive evidence that the poor receive the least and the least good medical care; argued convincingly that the treatment of the sick was no less a responsibility of health officers than the prevention of disease; and recommended that this Association appoint a committee to coöperate with appropriate federal agencies and the medical profession in working out national plans for the medical care of the underprivileged. Such a committee was appointed.

Three months ago under the chairmanship of Miss Roche and at the suggestion of the President, a National Health Conference was held in Washington. To that conference were presented the needs of the American people for health and medical care and definite proposals as to the several methods by which we as a nation can meet these needs.

The first recommendation was for the expansion of public health and maternal and child health services in order to minimize the risk of illness, to reduce

its current volume by expanding present federal-state coöperation under the Social Security Act. Through strengthened local health organizations it was proposed that a major attack be directed against those causes of disease and death for the control of which we have scientific weapons of unquestioned power.

To meet the great deficiencies in our physical facilities for good health it was recommended that additional hospitals, mental and general, tuberculosis sanatoria, health centers, and rural hospitals be built.

For the medically needy it was recommended that public medical care be provided for the dependent groups of the population, and for those who, although able to obtain food, shelter, and clothing from their own resources, are unable to procure necessary medical care.

To meet the economic burdens of unpredictable illness among self-supporting persons it was recommended that either general taxation, or special tax assessments, or specific insurance contributions, provide the funds. The rôle of the federal government in this respect should be properly that of giving financial and technical aid to the states in their development of sound programs of their own choice.

It was recommended also that insurance against the loss of wages during sickness be provided by an extension of existing unemployment provisions and other provisions of the Social Security Act.

It was urged that this program should be developed in an evolutionary manner over a period of ten years; that it should not be a federalized operation of health and medical care but that the federal government should use funds through grants-in-aid to assist in equalizing the financial burdens, to insure minimum standards and to give the incentive to all parts of the country to join in a national movement. Finally, it was stated that if a more limited health program were contemplated, priority should be given to the first and second proposals.

The National Health Conference dissected the whole complicated problem of medical care into its component parts. It outlined clearly the next steps which we as a nation should take. Each of these steps is simple and understandable. It will require, however, the best professional thinking to fit all elements of the health program into a sound administrative scheme for the prevention and cure of disease; and to integrate this with our present activities at federal, state, and local levels. It is clear that we cannot continue to think in terms of the separateness of public, private, and voluntary efforts, or of the separateness of preventive and curative efforts to reduce death and disease. Each contributes to the health of the individual and the nation. All are parts of the same entity. They frequently are not smoothly functioning parts. Our job is to make them mesh.

There is every prospect that the next steps in a national health program will be taken soon. Each step will impose additional duties upon health departments in every state and community. Since there is general acceptance of the principle of unity between the prevention and treatment of disease, sound public policy dictates that there should be a unity of administration for health and medical care programs. The health department obviously is the one agency best fitted to do this job. A national health program will not be launched full grown as an emergency measure. It is deliberately planned as an evolutionary development, in some of its phases covering a ten year period. None of us knows exactly the rate of progress in developing each of its several parts. All are confident that the

basic objectives are sound. There is no serious disagreement as to method. In some sectors we must learn by careful doing in order to plan the succeeding steps efficiently.

All of these facts point to the need that the health departments in every state, city, and county prepare to assume the added responsibilities which inevitably will be theirs. This will mean the training of a larger and better health personnel skilled in the several special scientific disciplines represented in this Association. To do this job well public health must be made a career service in every state, county, and city. No effective health program can be built on the quicksands of partisan politics. Appointments must be made on merit; tenure in office must be based on accomplishment.

In support of a nation-wide program of health and medical care, there is much more public interest than anyone expected. There is much more medical interest than anybody knew existed. The majority of medical opinion in the country, as reported through the House of Delegates of the American Medical Association, is more liberal in its view of national health problems than some of their spokesmen had indicated. The top men in clinical medicine, as individuals and as represented through their special societies, always have been leaders in progressive thought. Both of these groups in their thinking seem to be a little ahead of us whose job it is to serve the public health.

Public health seems to be one of the most popular issues in the country, non-political in character, appealing to all shades of opinion. But we must remember that this popular support will be transitory and evanescent unless the health services in every community are efficiently conducted. The success of a national program will depend on how fully the needs of the people for public health and medical care are served. From this point on, the attitude of lawmakers and of the public generally will be determined by what each state and local health officer does. It is on this basis that judgments will be made and progress will be possible. Even in advance of federal action there is a mass of public feeling at the health officer's command. It is his to be used for health improvement in any county or city where he is intelligent enough to organize it.

In an earlier time the pioneers of public health were alone in the wilderness. Few among the medical profession and the general public knew what health officers were doing or why. Our job is easier now. The doctors and the public are beginning to understand the social and economic importance of your job and mine. The health officer is no longer in the front rank of public opinion. In fact, he needs to think fast and to act effectively if he is not to lag behind.

Nor is the new attitude of the American people toward public health an isolated phenomenon. During the past summer I have been studying public health and medical problems in Central and South America. As chairman of the United States delegation, I attended the Tenth Pan American Sanitary Conference held in Bogota, Colombia, during the first half of September. Pursuant to treaty provisions, every American republic was represented by official delegates. From almost every country reports were presented which told of extraordinary activity in public health and in medical care for the underprivileged. These reports were verified as I visited several of the countries themselves and observed their activities. In tuberculosis and venereal disease control, in social security measures, in national programs for better nutrition, in maternity and child health work, no less than in the control of such pestilential diseases as

yellow fever and plague, great progress is being made, even in some nations otherwise backward.

Of great significance for the purposes of our present discussion is the fact that these measures are not being imposed by central governments upon apathetic populations, but are being carried out—in some cases reluctantly—because of widespread and insistent popular demand.

Public health has become a people's cause. The people have become insistent that they be given the benefits of what scientific knowledge has verified as valuable for the prevention and relief of disease and for the maintenance of healthful living. They are entirely willing to support, also, further studies to solve those problems of health and disease which still baffle us.

The Renaissance was the great upswing from the dark ages toward art, literature, and beauty in every form. It burst forth simultaneously in a hundred cities of Europe because the people were ready for it; it was the spirit of the age.

The French Revolution was the beginning of a world-wide fight for political freedom, in which our own young nation played its gallant part. The world movement toward beauty of form and expression seems to have leveled out. The world movement for freedom is alive only in isolated nations. But I believe that today we see the first faint stirrings of a world movement for health—a people's fight for life, for freedom from disease, for an equal opportunity to be born well and to live well.

Science has shown the way. Not only by the fruits of its labor which has saved men's lives, saved them suffering, and maintained their physical and mental fitness, but also through the orderliness of mind, the clarity of vision, and the willingness to sacrifice for truth (which are the fundamentals of the scientific spirit), it is my firm belief that man may hope to raise himself high enough in the human scale to master his own machines and to affirm his own destiny, rather than become the passive instrument of self-designated supermen.

Science has shown the way. The scientists of public health must be prepared to meet the demands of leadership. To do so may be the greatest contribution to social peace in our day.

Present Status of Dental Caries in Relation to Nutrition*

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THE rôle of nutrition in the cause and prevention of dental caries is perhaps one of the most controversial topics in dental research today. Only a brief discussion of the nutritional and bacteriological aspects of the problem can be given here. Reference is frequently made to papers already published and these should be consulted for further details.

Two recent papers present the dental viewpoints on the problem. Bödecker has discussed "Classification of the Lesions of Dental Caries and Factors Affecting the Rate of Penetration of Dental Caries,"[1] and Applebaum has reviewed "The various and variable factors which have been implicated in the mechanism of caries" under the following headings: (a) Bacteria and Enamel Decalcification, (b) Food Impaction, (c) Mechanical Injury, (d) Physiologic Factors in Caries, (e) Proximal Enamel Caries, and (f) Caries in the Dentin.[2]

At least 4 avenues of approach to the problem of the prevention and arrest of dental caries have been suggested:

1. Prevention by Operative Procedures
2. Prevention by Proper Mastication
3. Prevention by Diet
4. Prevention by Mouth Hygiene (especially as regards certain species of bacteria among which is *L. acidophilus*)

The first two are strictly dental, so the opinions of dentists as to their relative merits will be of greatest value. The third, Prevention by Diet, will be discussed in connection with the fourth, Prevention by Mouth Hygiene. The use of the tooth brush in personal hygiene is an accepted practice so will not be considered further as a factor in reducing caries incidence.

The reason for discussing Prevention by Diet and Prevention by Mouth Hygiene together is that the data extant show that the foodstuffs comprising the diet determine in great measure the flora of the mouth. I question whether this correlation has been sufficiently emphasized in interpreting the rôle of nutrition in dental caries.

Although Boyd, Drain, and Nelson of the University of Iowa were by no means the first to associate nutrition with the prevention of tooth decay, the diet published by them in 1928 and 1929 tended to focus attention upon the Prevention by Diet viewpoint.[3] The following foods plus insulin formed the basis of the daily menus of diabetic children in the University Hospital: 1 quart of milk, 1 egg, 1 serving of meat or fish, 1 orange or tomato, one additional fruit, 1 teaspoonful of cod liver oil, 6 teaspoonfuls of butter, one portion (½ cup) leafy vegetables (spinach, chard, greens, cabbage, etc.), one portion (½ cup) meaty vegetables (peas, beans, carrots, etc.).

After the children had been confined

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to this diet for several weeks the observation was made that cavities in the teeth had not progressed further—tooth decay had been arrested. There is no need to detail the dietary properties of these foods; their importance in any diet (or foods containing the same dietary essentials) is too well known to warrant further comment.

For many years prior to the work of Boyd, Drain, and Nelson, Bunting and his coworkers at the University of Michigan had been interested in the dental health of children in certain orphanages in Michigan. For several years the diet of the children in one of these orphanages was admittedly below the standards accepted as normal for children as regards protein, calcium, phosphorus and vitamins, and yet during this time these children had a very low incidence of tooth decay.[4]

What is a possible explanation of this apparent paradox regarding diet and tooth decay? The facts are that two very dissimilar diets have been published, each claiming either to prevent or arrest dental caries—one obviously, adequate, and the other admittedly inadequate.

It should be stated that neither Dr. Bunting nor his coworkers ever said that this inadequate diet produced optimum growth and well-being in these children. In fact Koehne reported "that 40 per cent of the 201 children between the ages of 8 and 18 who lived in the institution for an average of 4 years were stunted in height according to the Woodbury standard."[5]

Apparently confusion arose over the following points of view which were not clearly defined:

1. Caries was arrested and prevented by a diet *which stunted the growth* of many of the children confined to it.

2. Caries was arrested and prevented by a diet *which would induce good growth and well-being* in children confined to it.

In other words, *prevention of caries by diet* was confused with the *promotion or retardation of growth and well-being* by diet.

A comparison of the diet of the children in the orphanages with that fed by Boyd, Drain, and Nelson to the diabetic children shows that whereas the two diets vary greatly in nutritive value, especially as to minerals and vitamins, they are very much alike in one important detail—namely, they are both low in sweet foods such as jams, jellies, marmalades, cakes, cookies, candy, honey, sugar, and syrups.

The diets of diabetic children or adults contain varying amounts of carbohydrate, which comes largely from the 5 and 10 per cent fruits and vegetables with small amounts from cereals and bread and none or very little from the highly sweetened foods. The orphanage diet contained liberal amounts of cereals (starch) but in reference to sugar and other sweet foods, Dr. Jay, a coworker of Dr. Bunting, states: "Candy was strictly forbidden in the institution, sugar was never served at the table, and artificially sweetened desserts were served only on special occasions."[6]

This one detail, namely very low intake of sweet foods in both regimens, undoubtedly accounts in part at least for the observed results, low incidence of tooth decay. An appreciation of the one point of similarity in these two dissimilar diets is unquestionably a step in advance in our understanding of the problem of the rôle that sweet foods play in nutrition and the development of dental caries.[7] In some instances apparently starchy foods may also be an etiological factor in caries. In recording data, it would be better to use the terms starches, and sugars, or to name the suspected foods, rather than to use the general term carbohydrates.

Sweet foods have been accused of causing tooth decay for many centuries. According to Pickerill, Aristotle who

lived from 384 to 322 B.C. said in his book entitled "Problems": "Why do figs when they are soft and sweet produce damage to the teeth? Perhaps the viscous softness of the fig causes small particles to adhere to the gums and insinuate themselves into the dental interstices where they very easily become the cause of putrefactive processes." [8] If the term putrefactive were changed to fermentative the statement would sound very modern. Weinberger quotes the following from *A Treatise on the Teeth*, by A. Tolver, published in 1752: "All kinds of sweetmeats and sugar contribute very much to the destruction of the teeth, because their gluey juices stick to the teeth; besides, sugars are of an acid, penetrant and corrosive nature. Those who love sugar and use it much, rarely have good teeth." [9] Numerous other references associating sweet foods with dental caries could be cited but these two will suffice to show that the correlation did not begin in the 20th century.

Because of numerous observations that persons who chewed liberal amounts of sugar cane on plantations did not have rampant decay, the rôle of sweets in tooth decay was seriously questioned by dentists about 1912.[10] The following sentence is quoted from the book by Dr. J. Sim Wallace of England: "An explanation of the fact that the teeth of children who chewed sugar cane were relatively free from caries may be that sugar cane is a highly fibrous foodstuff and detergent in its effects, while the sticky sweets consumed by civilized man are not detergent and therefore induce caries." According to Bogert it takes 3 feet of sugar cane to make one standardized cube of sugar, hence one would have to chew a great deal of cane before very much sugar would be ingested.[11] In the light of Dr. Bödecker's studies the vigorous chewing of sugar cane would not only have a cleansing action on the teeth but also would increase the flow of blood to the dental pulps which in turn would improve the quality of the dental lymph and thus increase the resistance of the tooth to decay.[12] Workers on plantations would also receive vitamin D from sunshine which in turn may be a factor in lessening the caries incidence.

Only when the semi-solid medium was developed so that bacteria could be separated into species was it possible to formulate a working hypothesis as to the etiology of dental caries. In 1890 Dr. W. D. Miller as a result of his work in Dr. Robert Koch's laboratory formulated his now famous theory of tooth decay, as follows: Mouth organisms produce lactic acid in fermenting carbohydrates, and lactic acid decalcifies tooth enamel. Miller also noted that decalcification of enamel occurs at "retention centers," pits and fissures and proximal surfaces.

Dr. F. W. Broderick of England in *The Principles of Dental Medicine*, states "Miller's theory cannot be considered as fully explaining the various circumstances in which we find the presence or absence of caries. Although the theory may be true as far as it goes, and I personally have little doubt of its truth, it cannot be, by any means, the whole truth. It leaves too many questions unanswered, too many undoubted clinical facts unexplained." [13] This probably expresses the opinion of the leaders in the dental profession today.

There are two schools of thought regarding the bacteriological problems involved in dental caries; one represented by Drs. Bunting and Jay at the University of Michigan, and the other by Drs. Hatton, Fosdick, and Hansen at Northwestern University. Although these investigators differ as to the organisms involved they are in agreement that a diet containing liberal amounts of sweet foods is as a rule more conducive

to tooth decay than a diet low in sweet foods.[14]

I shall not undertake a detailed discussion of the dietary studies on prevention of dental caries made on children under 15 years of age by McBeath,[15] by Tisdall and coworkers,[16] or by Mrs. Mellanby,[17] to mention only a few investigators. These workers have in the main stressed the importance of vitamin D in caries prevention. However, the diets which they have fed to children, with the possible exception of those used by Mrs. Mellanby, have been low in sweet foods. It is impossible for me to evaluate her data until more details are given.

Is it not only fair to those investigators who are interested in the bacteriological aspects of the problem to ask the following questions: Is it vitamin D which has arrested caries or have these children been fed diets low in sweet foods which would produce a low count of *L. acidophilus* and/or other organisms concerned with acid production in the mouth and hence the conditions necessary for tooth decay have not been present? Is not Dr. Jay correct when he states . . . "in part, at least the beneficial effects of a satisfactory diet have been due to the automatic lowering of sweet food"[6]?

Before commenting further on the studies of McBeath and Zucker I quote some comments on dietary studies in general made by Dr. Mary Moore of Philadelphia:

> My own experience makes me question the assumption that little or no caries before 14 years of age assures little or no caries after this age. My report covers 80 cases seen on an average of three or four times a year continuously over a period of 15 years, from the age of 6 to 21. The individuals from whose records I made this report have had not only uniformity of dental diagnosis and treatment but also the benefit of medical care and good food . . . I question the claims that control or prevention of decay can be affected by diet, hygiene, and medical and dental care, unless many years have proven the validity of such claims. Eight years' observation would have shown, at any time, over 50 per cent of the group free from decay. Yet, observation for 7 years more shows that a belief that decay had been controlled would have been an illusion.[18]

Although Dr. Moore reported on only 80 cases, her points are well taken. Most of the caries prevention studies have been made on children under 15 years of age and the periods of observation have been short compared to the length of time she has followed her cases. Investigations have not included children during adolescent years when caries is so often rampant. Hogeboom has discussed the etiology of caries during these teen years from the standpoints of endocrinology and nutrition but has left the question open due to insufficient data.[19]

There are two points of view on the rôle played by foods in the dental caries problem:

1. Sweet foods lodge in secluded areas, are acted upon by bacteria which produce acids which attack the enamel.
2. Liberal eating of sweet foods inhibits consumption of other foods which contain dietary essentials such as calcium, phosphorus, fats, proteins and vitamins.

Dr. Applebaum states: "Enamel decalcification is the first essential lesion of dental caries."[1] This supports the first point of view which may be expressed as follows: the flora of the mouth as modified by diet plays a rôle in tooth decay.

So far as I know there are no data extant which directly support the second viewpoint.

Although in the last analysis it is perhaps unfair to stress the importance of any one factor in caries prevention because the body functions as a whole, the paper by McBeath and Zucker, June, 1938, "The Rôle of Vitamin D in the Control of Dental Caries in Children" is of special interest in connection with the second viewpoint expressed above. They make the follow-

ing statements which appear to focus more attention on the importance of vitamin D in caries prevention than any data reported with which I am familiar. They state:

> At School A, a new type of experiment was introduced, namely the feeding of the Boyd and Drain diet without the addition of cod liver oil. This resulted in a distinct but moderate reduction of caries incidence which by no means reached the low levels recorded when cod liver oil was included.[20]

This observation is of tremendous importance from the practical standpoint of controlling caries by diet for the following reason: If the menus served at School A were identical with those served in the other institutions where studies were being conducted and the only variable was that the children at School A were not given the cod liver oil whereas the other children were given it daily, what other explanation is there except that cod liver oil (vitamin D) permits a higher intake of starches and sugars than is possible without it?

No one could say that omitting 3 teaspoonfuls of cod liver oil deprived the children of any known dietary elements except vitamins A and D and small amounts of fat and iodine. The original Boyd and Drain diet contains an abundance of these, hence in the McBeath and Zucker experiment vitamin D is the only factor left to consider. If vitamin D does permit a higher intake of sugar and starches, what is the explanation? Due to the rôle of this factor in calcium and phosphorus metabolism, are the teeth better nourished through the dental lymph when the diet includes a liberal amount of vitamin D? Are they thereby more resistant to the action of acids produced by the flora of the mouth and hence do they show less tooth decay?

These investigators do not comment upon the sunshine which these children received. If the schools were all in one locality this point is probably of little importance. But in all research where human beings are involved this sunshine variable must be recognized, otherwise confusion may result in interpreting nutrition studies in various parts of the country. The sunshine in Santa Fe, N. M., is unquestionably of greater value than that available to children in a large smoky northern industrial city.

There are two points upon which all investigators would unquestionably agree:

> 1. A highly satisfactory diet not only for expectant and nursing mothers and young children but for all persons at all ages is a major factor in attaining the goal of preventive dentistry, preventive medicine, and nutrition. Such a diet is of importance not only from the standpoint of general health, but also from the standpoint of making the best teeth possible in the face of personal idiosyncrasies. It is probable that diet plays its greatest rôle in building good teeth during the first 10 years of life. According to Cockayne, hereditary dental defects manifest themselves as other physiological defects do; so an optimum diet is not a panacea for all dental problems.[21]
>
> 2. When it is known why certain persons are less susceptible to dental caries than others, and this appears to be the case, science may have a clue to the fundamental principles underlying the cause of this disease.

The question may be asked "Of what value to the practising dentist and to those interested in dentistry from the public health point of view is knowledge of our present understanding of the relation of diet to the flora of the mouth, which in turn apparently means the presence or absence of tooth decay?" It should be mentioned that observations on primitive races and also on numerous persons living under civilized conditions have shown that lack of mouth cleanliness may not and often does not bring about tooth decay when the intake of sweet foods is low. It is the change in the flora due to the intake of sweet foods (starches may also be involved at times) which plays a rôle

in caries incidence according to certain investigators.[4, 14]

Dr. Bunting says "No tooth was ever made that was strong enough to withstand the forces of caries if they were active in the mouth" and "The hope of controlling dental caries through dietary regulations by building teeth strong enough to withstand caries is wholly unwarranted." [22]

Undoubtedly what Dr. Bunting intends to say is that ruling out the small percentage of the population which for no known reason seems to be caries resistant (immune), it is impossible for the majority of persons to build teeth strong enough to permit a high intake of sweet foods. This point would appear to be well taken because no one has reported prevention of dental caries on a highly satisfactory diet which contained a liberal amount of sweet foods.

The data on the relation of nutrition to dental caries may be summarized into the two following practical suggestions:

1. If an individual is susceptible to tooth decay, he should reduce his intake of all sweet foods to a minimum. In this way he will keep the flora of his mouth low in those organisms known to be acid formers. Starches and fats should be his main energy foods.

2. In addition to keeping the intake of sweet foods low, each person should plan his diet so that all factors, including vitamin D, are present in abundance.

The disadvantage of these suggestions is that no one can do these two tasks for us. Each individual must accept the responsibility for taking a highly satisfactory diet and also for lowering his own intake of sweets. Parents must assume the responsibility for children.

Because of this individual responsibility from which at the present time there appears to be no escape, the problem of lowering the incidence of tooth decay is far more difficult to solve than if it were possible to attack it as some other problems in public health are handled, for example, vaccination against smallpox. Whether Dr. P. R. Howe's Ammoniacal Silver Nitrate Solution as recommended by Dr. J. M. Prime of Omaha will be the method for control of dental caries from the public health standpoint remains to be seen.[23]

Long experience in studying dietary problems makes me question whether entire freedom from dental caries, even if this were possible, would be sufficient to induce the average person to refrain entirely from sweet foods. It is perhaps a sounder policy to urge moderation in rather than abstinence from sweets, and admit that some tooth decay will probably result in most instances even though the individual has the best possible personal and professional mouth hygiene care. Optimum nutrition in the light of Dr. Bödecker's work may permit a little more leeway on sweets than a less satisfactory diet.

The cause of dental caries is an exceedingly complex problem but the data extant would appear to force the recognition of the relation of sweet foods to this disease. Again science has apparently offered a theory which seems to explain human experience. The science of nutrition contains numerous comparable examples—the rôle of diet in beriberi, scurvy, pellagra, and xerophthalmia; the rôle of cod liver oil and sunshine in rickets. Continued research on dental caries will unquestionably bring about as satisfactory an understanding of the many factors in this disease as it has in the case of the nutritional deficiency diseases.

REFERENCES

1. Bödecker, C. F. Variations in the Lesions and Activity of Dental Caries. *J. Dent. Research*, 16:51 (Feb.), 1937.

2. Applebaum, E. Tissue Changes in Dental Caries. *J. Am. Dent. A.*, 25:1223 (Aug.), 1938.

3. Boyd, J. D., and Drain. C. L. The Arrest of Dental Caries in Childhood. *J.A.M.A.*, 90:1867 (June 9), 1928.

Boyd, J. D., Drain, C. L., anl Nelson, M. V. Dietary Control of Dental Caries. *Am. J. Dis. Child.*, 38:721 (Oct.), 1929.

4. Bunting, R. W., and Palmerlee, F. The Rôle of *Bacillus Acidophilus* in Dental Caries. *J. Am. Dent. A.*, 12:381 (Apr.), 1925.

Bunting, R. W., and Co-workers. Further Studies on the Relation of *B. Acidophilus* and Dental Caries. *Dental Cosmos*, 70, 1 (Jan.), 1928.

5. Koehne, M., Bunting, R. W., and Hadley, F. P. A Review of Recent Studies on the Cause of Dental Caries. *J. Am. Dietet. A.*, 9:445 (Mar.), 1934.

6. Jay, P. Dental Caries. *J. Calif. State Dental Assoc.*, 13:177 (Sept.–Oct.), 1937.

7. Simmonds, N. Dental Caries (Discussion of Dr. Jay's paper). *J. Calif. State Dent. A.*, 13:217 (Nov.–Dec.), 1937.

8. Pickerill, H. P. *Prevention of Dental Caries and Oral Sepsis.* London, 1912.

9. Weinberger, B. W. *Orthodontics—An Historical Review of Its Origin and Evolution.* St. Louis, 1926.

10. Wallace. J. S. *The Cause and Prevention of Decay in Teeth.* London, 1912.

11. Bogert, L. J. *Nutrition and Physical Fitness.* Philadelphia, 1932.

12. Bödecker, C. F., and Lefkowitz, W. Concerning the "Vitality" of the Calcified Dental Tissues. *J. Dent. Research*, 16:463 (Dec.), 1937; and personal communication.

13. Broderick, F. W. *The Principles of Dental Medicine.* St. Louis, 1936.

14. Hansen, H. L., Fosdick, L. S., and Epple, C. F. The Action of Mouth Organisms on Certain Carbohydrates. *J. Am. Dent. A.*, 24:1611 (Oct.), 1937; *Science News Letter*, 33:132 (Feb. 26), 1938.

15. McBeath, E. C. Experiments on the Dietary Control of Dental Caries in Children. *J. Dent. Research*, 12:723 (Oct.), 1932.

McBeath, E. C. Vitamin D Studies, 1933–1934. *A.J.P.H.*, 24:1028 (Oct.), 1934.

16. Anderson, P. G., Williams, C. H. M., and coworkers. The Influence of Vitamin D in the Prevention of Dental Caries. *J. Am. Dent. A.*, 21:1349 (Aug.), 1934.

Tisdall, F. F. Panel Discussion on Dental Caries. *J. Pediat.*, 5:841 (Dec.), 1934.

17. Medical Research Council, *Special Report Series, No. 211*, "The Influence of Diet on Caries in Children's Teeth." Final Report, 1936, London.

18. Moore, M. M. Observation on the Age-Incidence of Dental Caries. *Ann. Dent.*, 3:77, 1936.

19. Hogeboom, F. E. Is Teen-Age Caries an Endocrine Problem? *J. Am. Dent. A.*, 24:422 (Mar.), 1937.

20. McBeath, E. C., and Zucker, T. F. The Rôle of Vitamin D in the Control of Dental Caries in Children. *J. Nutrition*, 15:547 (June 10). 1938.

21. Cockayne, E. A. *Inherited Abnormalities of the Skin and Its Appendages.* London, 1933.

22. Bunting. R. W. The Prevention of Dental Caries. *J. Michigan State Dent. Soc.*, Mar., 1937.

23. Prime, J. M. Controlling Dental Caries. *J. Am. Dent. A.*, 24, 1950 (Dec.), 1937.

Development of Industrial Hygiene in the United States*

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STUDENTS of industrial hygiene have known for some time that the health of the worker may be influenced not only by the working environment, but by factors associated with conditions outside the factory. However, it is only within the past year or two that we are beginning to realize that industrial health forms an integral part of the health of the community, and that our approach to industrial hygiene should be from the public health viewpoint. In view of the tremendous interest in industrial hygiene and the attendant rapid growth in industrial hygiene activities which has been taking place in this country during the past three years, it is most fitting and timely that we take inventory of the entire industrial health problem, its development, progress and future.

THE INDUSTRIAL HYGIENE PROBLEM

To assist us in determining the needs and the type of action to be taken in this field of public health, it is essential to consider first some aspects of the magnitude of the problem.

If we look upon industrial hygiene as adult public health, it is obvious that we are concerned with a large percentage of our population since, according to the last federal census, there were approximately 49 million gainfully employed persons. In the past, industrial hygienists have concentrated their efforts on the so-called *industrial population*—that group of workers engaged in the manufacturing, mechanical, and mining industries. Although it is probably true that the bulk of the occupational diseases occur in these industries, nevertheless, the 10 million workers in agriculture, the 4 million persons employed in transportation and communication, and the large number of workers in domestic and personal services, all have health problems deserving of attention.

While insufficient data have thus far prevented our recognition of the health problems in non-industrial pursuits, we have ample evidence to indicate that there exists a greater mortality rate in the industrial population than in the whole group of gainfully employed persons. Excess mortality is especially notable among unskilled workers, among whom the death rate from all causes in certain states was found to be 100 per cent in excess of the death rate among agricultural workers.

Studies of illness in industry made by the U. S. Public Health Service also show high rates of illness among workers. For example, the incidence of degenerative conditions and such diseases as occupational tuberculosis, and

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pneumonia was found in the industrial population to be higher than average. There is evidence to justify the opinion of authorities in the field of tuberculosis that deaths from this disease can be reduced 50 per cent by health supervision of workers in occupations predisposing to the disease, by detection of minimal cases, and by provision of adequate medical and institutional care in the early stages of the disease. A large amount of information testifies that a majority of cases are discovered too late for effective treatment. Again, it is also known that pneumonia mortality and disability are excessive among workers exposed to extremes in temperature, inclement weather, toxic gases, and dusts. Health supervision of the worker and his environment has been found effective in reducing illness and death due to this cause.

Workers employed in large establishments are provided health services to some extent. However, the provision of health services is made somewhat more difficult because of the fact that a large number of our workers are employed in small establishments. Recent studies [1] have indicated that as a general rule the smaller the plant the more costly is such a service to both the employer and the employee. In a study recently published by the American College of Surgeons on 299 companies employing 1,237,755 workers, it was found that establishments having 1,000 or more employees showed a per capita cost for medical and compensation purposes of $8.42 as compared with a cost of $13.52 for the plants having less than 500 workers. The significance of this finding becomes more obvious when it is realized that approximately 62 per cent of the workers in manufacturing establishments in this country are employed in plants having less than 500 workers. However, the obstacles associated with the development of a complete health service for employees in these small plants may be overcome. But to do so will require increased activity and the coöperation of all agencies interested in health conservation. Public health workers can play an important rôle in correlating the activities of these agencies.

In considering the improvement of the health of our workers, we find that we are confronted with several problems. First, because the relationship between cause and effect is more evident, the disability and lost time due to occupational accidents is still very important. In spite of the fact that great strides have been made during the past 20 years in the prevention of accidents, this form of injury still constitutes an important problem. According to the last preliminary report of the National Safety Council, there were 19,000 occupational deaths in 1937.[2] Studies also indicate that we have not approached minimum rates since the records for accidents in certain steel companies with best practices show a far lower rate than for the industry as a whole.[3] Second, it is well known that certain occupations are associated with poisoning, disease and high mortality. In the third place, many of our workers in early adult and late life are found to lack the physical capacity and mental stamina to undertake certain types of work. And lastly, we have come to realize that we have far too much absence from work due to sickness or fatigue, or other incapacitation due to a complex set of factors, some of which are no doubt controllable.

While accidents, occupational diseases, and high occupational death rates appear to be impressive, there is no doubt that the least dramatic side is probably by far the most important —namely, the lost time and incapacity due to illness. It is this last condition that is so widely prevalent as to be almost universal in all localities, at all ages, in all occupations. A vast amount

of wasted energy and life due chiefly to preventable illnesses, some of which may be contributed by the working environment, presents a problem in need of our serious attention.

Although we have made significant progress in the control of certain preventable diseases, as is evidenced by the declining trend of our death rate in the last 40 years, it is a fact that this saving of life has taken place chiefly in childhood and in early adult life. No significant increase appeared to occur during this period in the average years of life remaining to persons of middle and advanced age. The death rates from some important diseases of adult life have been increasing, a phenomenon understandable in the light of the fact that the principal causes of death operating in the advanced years are primarily chronic. Preliminary data from the National Health Survey,[4] based on surveyed persons of all ages, show that chronic diseases, including permanent impairments, alone account for 6 of the 10 days of incapacity due to illness and accidents experienced by the average person per year; and with respect to sickness and accidents, data recently published by the U. S. Public Health Service show in the instance of a public utility that on the average 7.5 days were lost annually by males and 10.9 by females.[5]

These studies further show that approximately half of the deaths from chronic diseases occur in the working ages (15–64), and that about 87 per cent of the persons in this age group are reported to have such ailments. Furthermore, about 50 per cent of those reported with chronic disease fall into the groups under 45 years of age. All of these facts should focus our attention on the problem of chronic disease among younger workers, and it would seem that if an attempt were made to discover these diseases in their earlier stages, a great saving in life and health would be accomplished. In other words, the greatest opportunity today for a substantial saving of life appears to be in the field of chronic diseases and the class offering this opportunity is the industrial population.

DEVELOPMENTS IN INDUSTRIAL HYGIENE

If we examine the early history of industrial medicine, we will find that the chief function of industrial medical departments was the treatment of traumatic injuries. Gradually, the work of the medical department began to extend beyond surgical treatment to the medical phases of the problem. Such functions as preëmployment and periodic physical examinations, job placement, and, more recently, medical and engineering control of occupational diseases, began to take their rightful place in industry. Where in the past attention was given mainly to the improvement of machinery, recent activities have been directed to the economic waste resulting from failure to provide protection against controllable health hazards. One of the primary stimuli to the introduction of more adequate medical services in industry has been the passage of workmen's compensation laws for accidents and occupational diseases. Today, 46 states have laws providing benefits in the event of accidental injury, and 21 of these states have enacted legislation compensating workers for one or more occupational diseases.

With reference to activities outside of industry itself, we find that these were limited chiefly to research on the part of federal agencies and one or two universities. Although the research work conducted by such agencies as the U. S. Public Health Service, the U. S. Bureau of Mines, and one or two universities was productive of considerable knowledge concerning industrial health

TABLE I

Summary of Industrial Hygiene Activities in the United States *

State	Number of Gainful Workers	Number of Workers in Manufacturing, Mechanical and Mineral Industries	Number and Kind of Personnel				Annual Budget
			Medical	Engineering	Other Technical	Clerical	
Alabama	1,026,320	220,378	1	0	0	0	5,600
Arizona	165,304	45,811					
Arkansas	667,870	83,560	0	1	0	1	4,200 †
California	2,500,969	673,646	1	1	1	1	22,020
Colorado	402,894	88,830	0	0	0	0	4,200 †
Connecticut	677,292	337,445	1	1	3	2	25,557
Delaware	98,104	35,348					
Florida	599,010	131,480					
Georgia	1,162,174	240,989					
Idaho	162,223	27,934	0	0	0	0	5,000 †
Illinois	3,184,875	1,164,979	2	2	3	2	35,400
Indiana	1,251,177	464,549	1	1	0	1	11,500
Iowa	912,832	167,147	0	2	0	1	8,350
Kansas	694,276	132,662	0	1	1	1	10,820
Kentucky	907,166	220,233					
Louisiana	815,725	156,030					
Maine	308,617	104,201	0	0	0	0	†
Maryland	672,906	228,599	1	2	3	2	12,900
Massachusetts	1,814,422	840,300	0	1	2	2	19,200
Michigan	1,927,498	860,164	1	6	5	4	45,500
Minnesota	992,847	210,299	0	0	0	0	1,335 †
Mississippi	844,887	79,318	1	0	1	1	9,100
Missouri	1,458,054	390,399	0	3	0	1	13,005
Montana	216,471	44,637					
Nebraska	507,022	71,517					
Nevada	42,885	11,776					
New Hampshire	192,671	89,461	0	1	0	1	8,380
New Jersey	1,712,125	741,299					
New Mexico	142,866	23,931					
New York	5,523,085	1,995,924	7	7	12	7	118,614
North Carolina	1,141,129	289,917	2	2	1	1	27,500
North Dakota	240,317	18,095					
Ohio	2,615,938	1,094,650	3	1	2	2	25,300
Oklahoma	828,029	172,163					
Oregon	409,680	102,125					
Pennsylvania	3,722,428	1,796,944	2	9	0	1	56,490
Rhode Island	297,168	164,304	2	3	1	1	23,000
South Carolina	687,721	146,344	1	1	0	1	10,300
South Dakota	247,678	24,207					
Tennessee	958,209	213,077	1	1	0	0	11,000
Texas	2,237,118	395,802	1	3	1	1	24,290
Utah	170,013	44,977					†
Vermont	141,190	42,851	1	1	0	1	11,500
Virginia	880,276	221,539	1	1	1	1	19,000
Washington	664,813	181,765	0	1	0	1	6,200
West Virginia	570,459	242,115	1	1	0	1	17,500
Wisconsin	1,129,546	380,229	1	2	0	1	11,000
Wyoming	92,451	19,046					
Totals	48,588,730	15,432,996	32	55	37	39	612,276

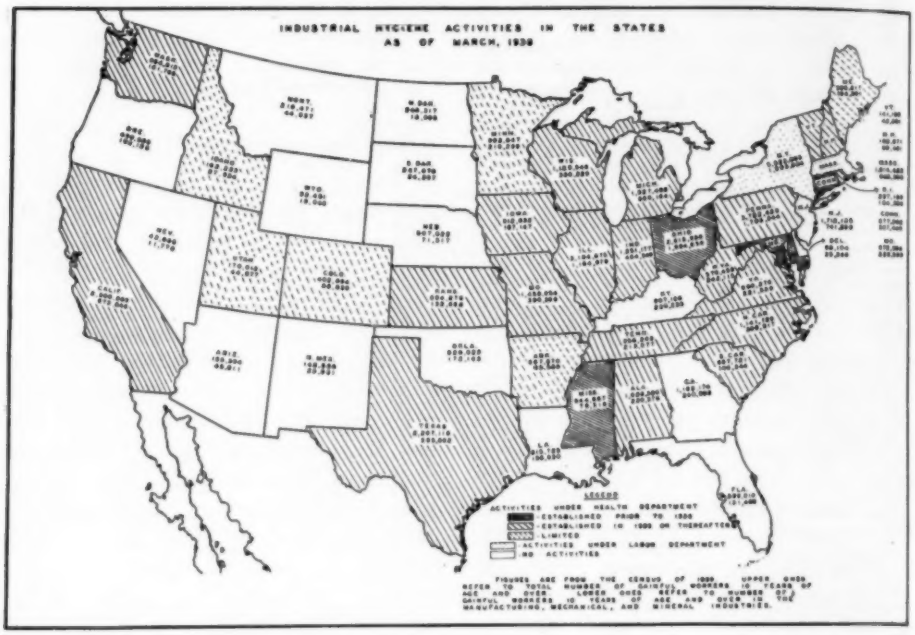
* All units in Health Departments except New York and Massachusetts; these two are in Labor Departments.

† Survey being conducted to determine state's needs in industrial hygiene.

hazards, very little application of these findings was in practice in the states. As a matter of fact, prior to 1936, industrial hygiene administration in state and local government was confined to three or four health departments, and one or two state departments of labor. In all probability, this limited work in industrial hygiene also accounted for the few schools giving instruction in this field of public health.

Responsibility for safeguarding the health of our workers rests chiefly with state and local government. This fact is an outgrowth of our political system which gives much autonomy to

FIGURE I



the individual states. The agencies of the federal government concerned with industrial hygiene are engaged primarily in the collection and dissemination of information, conducting field studies, laboratory research, and protection of the health of federal employees. Prior to 1936 most states dealt chiefly with matters of safety, sanitation, employment of women and children, and compensation of employees following accidents.

When funds were made available by the Social Security Act for the development and extension of all branches of public health work, the U. S. Public Health Service, in coöperation with the Conference of State and Provincial Health Authorities of North America, inaugurated a program designed for the purpose of establishing active industrial hygiene work in state and local health departments. Table I presents a summary of industrial hygiene activities in the various states, while Figure I depicts graphically the progress of these activities in the United States. It is evident that in the short period elapsing since the passage of the Social Security Act, the development of industrial hygiene has been rapid; and if our progress continues at the same pace, it may in time attain a level commensurate with its value to the national economy. It may be seen from Table I that there are now 26 industrial hygiene units actively engaged in this work, while 6 other states are conducting surveys for the purpose of determining their needs with reference to such a program. Where less than three years ago the small sum of approximately $100,000 was being budgeted for this activity, today nearly three-quarters of a million dollars are being expended in this work. Where three years ago only 12 million gainfully employed persons were receiving a limited degree of industrial hygiene service, today approximately 40 million workers are given some consideration with reference to industrial health hazards.

The progress indicated appears phenomenal. But if we compare the 15 mills per worker being expended on industrial hygiene activities to the amount of money per capita spent for other public health work, and bear in mind the large working population in this country, the numerous problems still unsolved, the fact that we are spending billions of dollars annually in compensation and other costs for injuries and illnesses, it is apparent that we are still only at the beginning.

In inaugurating industrial hygiene programs the various states have been confining their efforts chiefly to the evaluation and control of occupational diseases in industry. This method of approach to the industrial health problem is logical for several reasons. First, the relationship between specific occupational diseases and environment is often evident, and tangible benefits of control practice are readily demonstrable. Second, the manner in which some occupational diseases have developed in certain industries has been of such a dramatic nature that the public has become more conscious of the importance of such diseases and the need for providing measures for their control. And finally, we must not lose sight of the fact that even today many public health workers view industrial hygiene as merely accident and occupational disease control. As already stated, however, industrial hygiene is essentially adult health promotion among the gainfully employed, and necessarily runs the entire gamut of public health for these individuals.

Nation-wide data to support this view are being collected and analyzed. It is hoped to have some basic statistics on the subject of illness and death by occupation in this country as soon as the U. S. Public Health Service has had an opportunity to analyze the results of its recent inquiry on more than a half-million workers. Limited statistics for the prevalence of occupational diseases are available for only a few states, since the principle of compensating for an occupational disease is of recent origin in this country, and the general reporting of occupational diseases continues to be in a chaotic state. In Wisconsin a workmen's compensation law has been in operation longer than in any other state. Some unpublished analyses of recent data from this state have been furnished by Dr. W. M. Gafafer of the U. S. Public Health Service and bear examination. For the 16 year period from 1920 to 1935, occupational diseases accounted for 2 per cent of the total compensated cases. During 1935 this percentage increased to 2.8. During the same 16 year period, 2.8 per cent of the total costs for all injuries was due to occupational diseases, but during 1935 the corresponding percentage increased to 7.1. The compensation cases settled in 1935 represented a loss of over 2 million working days, and of these days lost, 8 per cent were accounted for by occupational diseases.

It is realized, of course, that some occupational diseases are not reportable, and a certain number of such diseases receive no compensation. Still, there is sufficient evidence to indicate that although the incidence of occupational diseases and costs are rising, they still constitute but a small percentage of total compensated cases and costs. Reports from other states, such as New York, New Jersey and Ohio, show a similar trend. According to the United States Department of Labor, the total direct and indirect costs of industrial injuries in this country are approximately 5 billion dollars annually, and of this amount, occupational diseases account for but a small percentage.

A valuable criterion in the study of disease is the amount of time lost from work. This test not only measures disability, but also reveals the social and economic significance of the problem.

Recent studies of absenteeism from illness and injury indicate that illness causes far more absenteeism than do industrial injuries. In a limited study made by the American College of Surgeons,[1] 116 companies in various parts of the United States, employing 352,591 workers, reported a loss of 208,648 days in 1936 on account of industrial injuries, or a loss of 0.6 day per person. Of this total amount of absenteeism for industrial injuries, occupational diseases accounted for only 0.01 day per person per year. Some of these reports to the American College of Surgeons contained accurate data on absenteeism, which showed that the average worker loses nearly 9 days per year from non-industrial injury and illness, or approximately 15 times as much time as he does from industrial injuries. Additional evidence on this subject has been reported recently in Great Britain,[6] where among 5,197,643 persons employed in factories in 1935, there were only 428 cases of occupational disease, 163 of these being lead poisoning and 142 epitheliomatous ulcerations. Thus, the British experience with reference to occupational diseases appears to be similar to our own.

All of these facts indicate that the economic losses from absenteeism due to illness among industrial workers must be enormous. When we take into account the wide difference between the few millions of dollars spent on industrial hygiene by industry and government, and the billions lost due to accidents, occupational diseases and sickness in industry, we are forcefully brought face to face with the meager efforts of our present attempts in the direction of the protection and improvement of the health of our workers.

It would seem, therefore, that if we are to improve the general health status of the most important and numerous group in our population, it will be necessary to control not only unhealthful conditions in the working environment, but also to give consideration to such factors as proper living conditions, nutrition, elimination of strain and hurry, communicable diseases—in fact, a general adult health program for our workers. In order to promote a broad and effective industrial health program of this type, it will be necessary to integrate it closely with existing public health activities.

AN INDUSTRIAL HYGIENE PROGRAM

Experience has shown that in the practice of industrial hygiene the essential features of a program should include fundamental research, application of research and educational activities designed to acquaint the public with the importance and needs of industrial health. State and local health departments are by the very nature of their organization and their responsibility most fitted to carry out the application and education phases of the program, leaving the investigative phases to federal, university, and other research agencies. In view of the experience of the U. S. Public Health Service in this field, it has been possible to recommend a program which could be undertaken by the various units.[7]

The determination of the scope and nature of the industrial hygiene problem should be the first consideration, and this will indicate the kind, magnitude, and direction of the work to be undertaken. It would be possible to make this determination in any state, were reliable statistics available on industrial morbidity and mortality, and accurate information on occupational diseases and accidents. At present such data are lacking in nearly all of the States; in some instances information on accidents exists, and less frequently, on occupational diseases. A preliminary survey of all work places, such as is now in progress in many of our states, will yield information on the potential occu-

pational disease hazards and on the extent of health services. However, the information obtained by such surveys is very limited, and steps should be taken to secure reliable data on lost time due to occupational diseases and other illnesses.

However, the preliminary surveys now in progress indicate that already sickness records are kept on nearly half of our working population. It is felt that by an intensive educational campaign among industrial officials and local physicians, arrangements can be effected for securing reports of absenteeism due to occupational diseases and other illnesses. These reports should be uniform and should be transmitted to the state department of health. Duplicate copies of selected data could also be furnished to the U. S. Public Health Service for study. The Service has been receiving such data for many years from a group of 30 industrial sick benefit organizations providing sickness benefits for approximately 170,000 industrial workers, so that the machinery for expanding this plan on a nation-wide basis has already been tried and found satisfactory. Such fundamental information will form the basis of constructive programs within the states, since it will then be possible to evaluate those conditions causing excessive absence due to illness and to take the necessary steps for their control. In so far as the federal government is concerned, data of this nature should serve as a guide in any future research in this field.

When the various health hazards in industry have been established, the industrial hygiene unit is in a position to evaluate each one and to determine the means necessary for its control.

It is evident from a study of the program recommended herein that the object has not been to carry on work which has already been done or which is being accomplished by other agencies, but to supplement these activities with work which is necessary in order that public health may be brought to our industrial workers. For this reason, the Public Health Service has recommended that the industrial hygiene program be accomplished coöperatively and the local industrial hygiene units, in addition to furnishing services to physicians, industry, and labor, should serve also as a source of information for other state agencies. Perhaps one of the difficult problems which each unit has had to solve is that of coördinating its work with existing agencies, such as departments of labor, industrial commissions, and others.

The above program is a summary of the activities being attempted by the various industrial hygiene units in this country. As may be seen from an examination of Table I, most of these units employ a very small personnel—usually a physician, an engineer, a chemist and a secretary—and, in addition, are endeavoring to carry on this program with very limited funds.

It should be evident that if all the factors influencing the health of our workers are to be considered, then it will be necessary to draft all of the resources at the disposal of a department of health. This is a perfectly legitimate view of the problem if we pause to consider the method of approach which may be employed. For example, it is conceded that many of the diseases of childhood are not directly associated with the school environment; yet this fact has not deterred our health departments and practising physicians from doing their most effective work in the prevention of childhood diseases through the medium of the school. It is our feeling that the protection of the health of the industrial worker requires the same type of organized effort that has proved satisfactory for the protection of the health of the general public. Hence, it is logical to attempt to com-

bat our adult diseases by approaching the problem through the medium of the factory. For example, some public health administrators may feel that with the limited number of so-called industrial workers in their states, industrial hygiene activities may not be justified. Yet, there is no reason why these same health departments cannot carry on a program of nutrition, venereal disease, tuberculosis, or malaria control through the industrial groups in coöperation with the industrial hygiene unit. By so doing they will be practicing effectively public health among a vast number of people. At present such programs employ the home as a means of contact. It would seem that this approach of bringing public health to the factory should commend itself from the viewpoint of efficiency alone. The fact that many illnesses among our gainfully employed may not be directly caused by the working environment should not deter physicians and public health workers from attempting to eliminate the causes of these diseases through the working environment.

It is desired to stress the fact that in order to carry on any kind of public health work in the factory, it is still necessary that the personnel know industry and industrial processes, and for this reason the only persons logically to guide the work should be those particularly trained in the field of industrial hygiene. However, there is no reason why there should not be a closer coöperation between the industrial hygiene personnel in a state health department, the various local public health units, and the medical practitioner, in an attempt to bring public health to our gainfully employed and indirectly to their families.

In other words, the industrial hygiene unit in the state department of health will determine the nature and extent of the health problems in industry, will attempt to study and control those specific environmental health hazards which require highly specialized personnel, and will also integrate, as far as is practicable, with local health units, those public health functions which are for the common benefit of the industrial and general populations of the state.

I have attempted to picture the problem of industrial hygiene in this country, indicating its magnitude, its development, and have suggested a course for the future. Rather than essay to summarize my remarks, I should like to emphasize two points in my discussion which I consider of significance. First, we must supplement our present information on occupational diseases and accidents with a knowledge of absenteeism with respect to frequency, duration, and cause in each numerically important occupational group in a working establishment. Such data will serve to reveal to the management and to the public health worker the type of action which should be taken to obtain the maximum reduction in the amount of time lost from work on account of disability. We cannot brush aside the fact that it is this lost time which is so important both from a humanitarian and economic viewpoint. Second, we must consider the industrial hygiene problem as one of adult health. It seems to me that only by approaching the subject of industrial hygiene from the standpoint of adult hygiene will we be able to make the necessary progress in this important field of public health.

To accomplish this effectively, it will be necessary first to develop a strong industrial hygiene unit in the state health department, consisting of various specialists in the field of occupational diseases and other causes of disability. With such a unit to guide the work, it should be possible to integrate existing public health activities with the program of industrial hygiene. Only by such coordinated effort can we hope to improve the health of our industrial workers.

REFERENCES

1. Newquist, M. N. *Medical Service in Industry and Workmen's Compensation Laws.* American College of Surgeons, 1938.

2. *Accident Facts.* Preliminary 1938 Edition. National Safety Council, Chicago, 1938.

3. Accident Experience in the Iron and Steel Industry to the End of 1932. *Month. Labor Rev.* Bureau of Labor Statistics, U. S. Department of Labor. Vol. 37, No. 3 (Sept.), 1933.

4. Preliminary Reports. The National Health Survey: 1935–36. The Magnitude of the Chronic Disease Problem in the United States. *Bull. No. 6.* Sickness and Medical Care Series, Natl. Institute of Health, Washington, D. C., 1938.

5. Gafafer, W. McK. Frequency and Duration of Disabilities Causing Absence from Work Among the Employees of a Public Utility, 1933–1937. *Pub. Health Rep.*, 53, 30 (July 29), 1938.

6. Buchan, J. J., and Stewart, Donald. Public Health Services and Industrial Hygiene. *Pub. Health*, London, LI, 6 (Mar.), 1938.

7. Bloomfield, J. J., and Peyton, Mary F. The Evaluation of the Industrial Hygiene Problems of a State. *Pub. Health Bull. No. 236* (June), 1937.

Value of the Vital Statistics Data on Birth and Death Certificates in County Health Work*

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VITAL statistics are of tremendous value to every health department —local, state, or national. From these data it is possible to learn the number of individuals born each year, the number of deaths and from what causes, as well as particulars by color, sex, and age, and other vital facts. Vital statistics record the progress which is made in public health. We propose to present for discussion, certain facts relating to births and deaths from the standpoint of a county health department.

Among the American Colonies, Massachusetts was the pioneer in the inauguration of a system of vital bookkeeping. A law was passed in 1692 which required the town clerk to register marriages, births, and deaths. This state, in 1842, enacted a registration law which was amended in 1844. The Secretary of the Commonwealth was made the custodian of these records.[1]

Records of the early meetings of the American Public Health Association show that vital statistics was one of the subjects which received the serious consideration of the members. Through activities of the American Public Health Association, The American Medical Association, and other interested organizations, the "Model Law" for vital statistics was developed in 1907. The "Model Law" designates the state as the primary registration unit. With certain exceptions, this work is a function of the state health department. Either the state health officer or some member of his staff is the state registrar of vital statistics.

States are divided into registration districts with cities, towns, townships, villages, or other units comprising a primary registration district. The local registrar may hold his office by reason of his appointment or election as a town, village, or city clerk, or may be appointed for a definite term by the state health officer or state registrar. For efficient service, the latter method is to be preferred.

Transportation was a serious problem when the Model Law was developed. Large numbers of registration districts were organized which would not be required under present conditions. As new communities developed into cities and villages and were incorporated, additional districts resulted. Consequently, there has been a gradual increase in the number of registration districts. In some counties there may

* Read before the Vital Statistics Section of the American Public Health Association at the Sixty-Seventh Annual Meeting, Kansas City, Mo., October 25, 1938.

be less than 10 districts, while in others the number may reach 50 or 60, or more. The additional registration districts have materially increased the work of state divisions of vital statistics.

In order to simplify registration, one individual may serve as the registrar for several districts. The following will illustrate this suggestion. One New York State town has an area of 129.5 square miles. In this town are 15 incorporated villages and one city. The town clerk is the registrar for the rural area as well as for 13 of the incorporated villages. We have been informed this arrangement is agreeable to all persons concerned, although the office is not centrally located. If local registrars do not forward their reports promptly, the work of the state registrar in checking and tabulating the returns is delayed. A further delay may be experienced in the classification of certificates, due to the omission of necessary data. This is especially true as relates to the medical and statistical particulars of death. Due to the volume of work done by a division of vital statistics and the delays experienced in securing complete reports, it is not unusual for a period of weeks or months to elapse before detailed summaries are available. This is not a criticism of any division of vital statistics, but a statement of fact. It is not generally realized that there is a considerable interval between a rural death from some preventable cause and its tabulation by the state health department. Numerous miles and many months may intervene.

In recent years local full-time health services have assumed a new importance in the nation's health program. In these health departments are qualified and trained experts, not only in communicable disease control, sanitation, child and maternal health, but in other specialties, including vital statistics. The full-time health department provides a definite integrating agency between the event of a birth or a death and its tabulation, which has not previously been available to the statisticians. It is logical, therefore, that the county health department, operating on a full-time basis and with qualified personnel, should be recognized and have a significant part in the vital statistics program.

The county health department may serve as the collecting agency in two ways: First, if the county is small in area, it may be designated as a registration district with the health officer as the registrar. He is then responsible for the collection of birth and death certificates, their local registration and prompt transmission to the state registrar at the close of the month. However, the county with so limited an area as to have but one registration district will be the exception. A second method will apply to counties having more than one registration district. Arrangements may be made for birth and death certificates to be transmitted to the state health department through the county health department. This may be accomplished by an informal agreement or by an administrative order issued by the state health officer under which local registrars would forward certificates to the county health department without delay after the data have been copied in the register. The county health department would thereupon make copies for file and transmit the original certificates to the state registrar at the close of the month.

The latter method will be placed in operation in Nassau County, N. Y., in the near future. The state registrar of vital statistics will notify the local registrars of the State Health Commissioner's administrative order effecting the change. A representative of the State Health Department will call on each of the local registrars to discuss

the new arrangement and to answer any questions. In all other respects, the system of registration will remain unchanged. Local registrars will forward to the State Health Department the usual report card showing the number of certificates received during the month, or if no certificates were received, a card containing a statement to that effect.

Since the area of a county is small in comparison with that of a state, the health officer may easily communicate with local registrars by personal call or telephone. On the other hand, registrars will find it possible to utilize the services of the health officer or his staff when confronted with technical questions on registration.

As certificates are received in the office, file or index cards are prepared for each birth and death. Certificates are checked for completeness of information. With the approval of the state registrar, the health officer may query statistical and medical particulars, or other data which have been omitted.

The file card for a birth should be of sufficient size that additional particulars may be entered, such as a record of immunization or vaccination reported by the attending physician or from clinics; the occurrence of communicable diseases, as well as other information relating to the health of the child. This card, in reality, may be a life history of the child as long as he lives in the county.

Each nurse is furnished a record of the births reported in the district to which she is assigned. She will arrange a regular schedule of visits to these homes and will supplement the advice of the attending physician by actual demonstrations in the care of the baby. The nurse, as soon as the baby has reached the age for the application of certain preventive procedures, will stress the importance of those measures, and the information will be entered on the record card as soon as the child has been immunized or vaccinated. It is anticipated that the nurse eventually will have knowledge of the personal health of not only the babies in her district, but also of the preschool and school group. A record will be available of all visits made by the nurse, and if any unusual condition should occur, this record will show whether or not she has made her calls at the homes involved.

Statisticians will agree that the use of a prophylactic for ophthalmia neonatorum is of great importance to the local health department. Each birth certificate may be reviewed to learn if the preventive was used. If any physician or midwife is not using it routinely, the local health department will be in a position to demand compliance with the law.

Health officers should have immediate and accurate knowledge of all deaths. Daily receipt of these certificates provides this information and allows an investigation of such fatalities, if such is necessary. Communicable disease deaths are checked against case reports. If the case is not of record, it will be possible for the health officer to confer with the physician, secure the report and also learn why compliance was not had with the communicable disease regulations.

It is to be presumed spot maps of the major infectious diseases such as diphtheria, typhoid fever, scarlet fever, measles, whooping cough, pneumonia, and tuberculosis are kept in every health department office. If so the record of deaths may be shown by substituting a different colored tack to that used to show the case. Of equal importance is a spot map for infant deaths. By use of this method, it will be possible to visualize their distribution.

The circumstances of maternal and

infant deaths should be as thoroughly investigated as those due to communicable diseases. Prompt receipt of these certificates will permit such investigations, whereas, if they are forwarded direct to the state health department several weeks may elapse and necessary supplemental information may be forgotten.

All deaths from causes other than communicable diseases should be routinely checked against the syphilis and tuberculosis register. It will not be unusual to find an occasional report of a death from causes other than the two diseases and the case report may be removed from the register.

In the local health department it will be possible to review death certificates of individual physicians if occasion demands. Such certificates may be studied over a stated period and if there are repeated inaccuracies, a personal call to the physician's office may adjust these particulars. The same procedure will apply to causes of death, if vague and indefinite terms are used. We believe this will stimulate physicians to include greater detail of the causes of death on the certificates which they sign. The full-time health department should thus increase the accuracy of the original records on which statistics depend. Even though the tabulation may be accurate as to the certificate received, primary accuracy is essential. There is no more efficient method of improving the accuracy of certificates than by utilizing the services of the county health department.

The performance of autopsies may be stimulated by the health officer who is interested in obscure causes of death. Personal contact to establish this procedure is not possible from the state health department.

It has been said: "There are potential accident hazards in every field of human activity and in every individual act. Disorder in the home, improper driving, the careless hunter, the unguarded machine—are but a few of the all-pervading causes of the accidents which each year kill 75 to 85 of every 100,000 people and injure 100 times as many. No occupation, no recreation, no avocation is secure from the ofttimes disastrous consequences of unsafe practices.[2]

Accident prevention has been recognized for years as essential to good operation. As a result, industry has achieved remarkable results in the reduction of accidents among its employees. While these accidents have declined, those due to motor vehicles, to home causes, or in public places have increased. It is only within recent years that there has been a real interest in the prevention of accidents other than those which are incident to industry.

Accidents may be prevented. To develop an intelligent preventive program, information must be available as to where and under what circumstances these mishaps occur. Within the past few years a number of state health departments have inaugurated special studies of fatal accidents which were made possible only through access to death certificates. Primarily, the state must take the initiative and supervise such studies, but of necessity must secure assistance from the communities where the fatalities occur. No other unit of the county government is as well equipped to secure this information as the health department. The work requires the active interest of the health officer and his staff. Of especial value in securing this information and also in advancing the cause of safety is the public health nurse. Field nurses, or other field personnel will secure greater details of the accident than would be contained in the report of the medical examiner, or than could be secured by correspondence.

Valuable use will be made by the

county health department of the vital statistics data on birth and death certificates. There is an advantage in having these data centralized, in order that such information as may be requested will be supplied without delay. The reading public is interested in health conditions, and especially in those factors which relate to mortality. Frequent and complete details on both births and deaths may be prepared and released to the public press.

The health officer will find it possible with such data to evaluate more properly the progress in public health work in his county. Consequently, in participating in vital statistics registration the county health department increases the efficiency not only of its own program, but also its services to the public.

REFERENCES

1. Whipple, George Chandler. *Vital Statistics.*
2. *Accident Facts,* 1937 edition.

Outbreak of Encephalitis in Man Due to the Eastern Virus of Equine Encephalomyelitis*

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ABOUT the middle of August, 1938, cases of encephalomyelitis in horses were recognized in Massachusetts and it was soon ascertained that an epidemic of considerable proportions existed. On August 12 a child from Brockton died of encephalitis, and when a second child from the same city died on August 30 a rumor spread that the two had been victims of the disease prevalent among horses.

On September 1 the Massachusetts Department of Public Health began to be bombarded with questions as to the truth of the rumor. The answer given was that there had never been an authenticated case of human disease due to the equine virus. On September 2 a death from encephalitis was reported in a child from Marshfield, not far from Brockton. On the same day it was learned that a child, reported on August 31 from Abington as poliomyelitis, had been sent to the Haynes Memorial Hospital where a diagnosis of encephalitis was made. Likewise, on the same day a telephone request was received for aid in making a diagnosis of an illness in a child from Rockland. A consultant of the department, sent to see the case, found that the symptoms were those of encephalitis.

All five of these cases occurred within 15 miles of each other, the nearest being 20 miles southeast of Boston. An interesting coincidence was that they had occurred in essentially the same area as the equine disease. Because of this fact and also on the chance that this was just the beginning of an outbreak similar to the one at St. Louis, the department arranged for virus studies on any fatal cases that might occur. Over the Labor Day week-end the child, seen by the department consultant and transferred to the children's Hospital, died. Two other cases admitted to the Haynes Memorial Hospital on September 1 and 3 also proved fatal. Brain tissue from the first case was put into experimental animals in the Department of Bacteriology of Harvard Medical School, and brain tissue in glycerine from all three was sent to the Rockefeller Institute at New York.

NOTE: The author is merely acting as spokesman for the Department, most of the members of the Division having taken part in the investigation. The Department wishes to acknowledge its indebtedness to Dr. J. E. Gordon, Dr. C. F. McKhann, and Dr. S. Farber of Harvard Medical School and the Children's Hospital for assistance in guiding the investigation and evaluating the epidemiological, clinical, and pathological findings; to Dr. L. D. Fothergill and his associates of Harvard Medical School and Dr. L. T. Webster of Rockefeller Institute for making virus studies; to Dr. C. Wesselhoeft and Dr. E. C. Smith of the Massachusetts Memorial Hospitals for information in regard to their cases; and to Dr. James P. Leake of the U. S. Public Health Service, and Lt. Col. J. S. Simmons and Lt. Col. Raymond Randall of the Office of the Corps Area Surgeon, First Corps Area, Boston, for valuable suggestions and information.

* Read before the Epidemiology Section of the American Public Health Association at the Sixty-seventh Annual Meeting in Kansas City, Mo., October 26, 1938.

During the next few days a number of additional cases of encephalitis were discovered in the same area, and brain tissue from other fatal cases was obtained for virus study.

Information was received by the Massachusetts Department of Public Health simultaneously from Fothergill, Dingle, Farber, and Connerley [1] of Harvard Medical School and the Children's Hospital, and Webster and Wright [2] of the Rockefeller Institute that the eastern strain of the equine encephalomyelitis virus had been isolated from the brain tissue. The investigation immediately assumed a new importance. The existence of a new human disease had been established. The virus is known to be widespread in horses along the Atlantic coast. If the western strain can also cause human infections, a public health problem of some magnitude may confront us.

The U. S. Public Health Service had been informed of the increased prevalence of encephalitis, and when cases were definitely proved to be due to the equine virus Dr. James P. Leake and an entomologist were sent to Boston to aid in the investigation. Because Kelser [3] and others had demonstrated that mosquitoes can transmit the disease in laboratory animals, a mosquito survey * was begun on September 19. It was found that Aedes mosquitoes, the probable vector among horses, had already practically disappeared for the season. *Culex pipiens* was the mosquito most frequently encountered in the area. Mosquitoes were collected in homes of cases and around stables where fatal disease in horses had occurred, in the hope of discovering some that might be carrying the virus. So far no virus has been recovered from such mosquitoes.

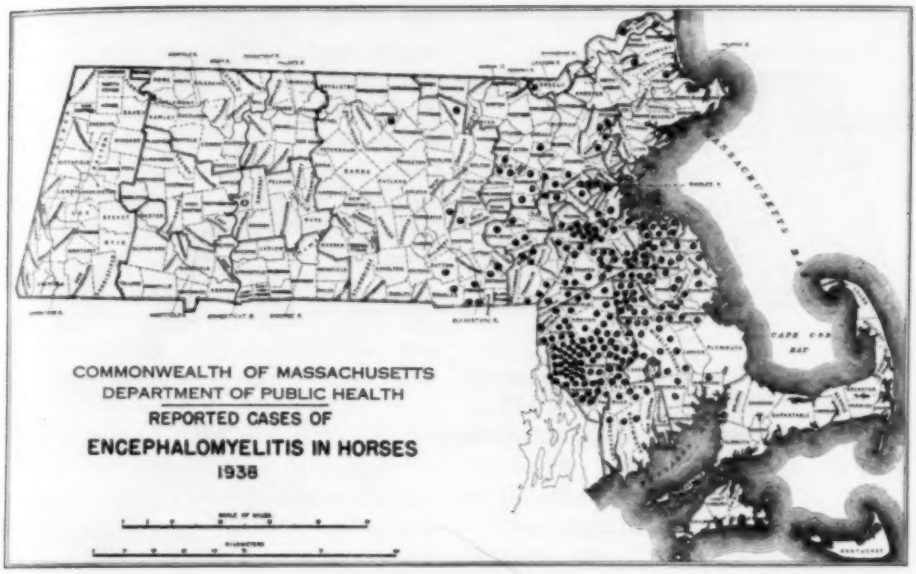
* Valuable assistance in the survey was rendered by Virgil I. Miles, entomologist, of the U. S. Public Health Service.

THE DISEASE AMONG HORSES

While the etiology of equine encephalomyelitis in this country was not definitely established until 1930, it is believed that outbreaks had been occurring in previous years. Conditions formerly called forage poisoning and botulism are mentioned by Meyer as probable cases. When the disease became epidemic in Southern California in 1930 and 1931, Meyer and his coworkers isolated the virus [4] and described the disease [5] and its pathology.[6] When cases were recognized in the East it was noted that the case fatality rate was twice as great east of the Appalachian Mountains. This led workers to suspect that a different virus was present in the East. Ten Broeck and Merrill [7] and Howitt [8] have demonstrated that the eastern and western strains are immunologically different from each other and also different from the strain causing Borna disease in Europe which had been proved to be due to a virus in 1926.[9] Strains from Argentina and certain other South American areas behave the same as the western strain. Those from Panama are identical with the eastern strain.

There is very little evidence that the disease has been present in New England in recent years. Veterinarians now believe that cases occurred in Massachusetts in about 1913 and 1914 and that the highly fatal epidemic among horses in 1872 was probably encephalomyelitis. The disease, however, is known to have been present in various states along the Atlantic seaboard from Florida to New York in recent years.

While the disease among horses was not definitely recognized in Massachusetts in 1938 until after the middle of August, it was eventually found that cases had occurred in that state as early as July 12 (one questionable case reported June 4). The number increased with considerable rapidity, reaching a peak in the week ending August 27 and



rapidly decreasing thereafter (Table I). The number of cases reported to the Massachusetts Division of Livestock Disease Control has now reached 251. This probably does not represent all of the cases, since horses must have died without coming to the attention of veterinarians. Other delayed reports continue to come in. The number of horses on the tax lists in the counties (Table II) most seriously affected was 5,738 (Bristol, Norfolk, and Plymouth Counties). The total number of cases reported from these counties was 204, which gives an attack rate of about 3.5 per cent (see map). This compares with 10 per cent noted by Meyer [5] in California at the time the causative organism was first recognized.

TABLE I

Reported Cases of Encephalomyelitis in Horses *

Dates of Onset

Week Ending	*Number*
June 4	1
July 16	2
23	1
30	1
Aug. 6	3
13	18
20	55
27	68
Sept. 3	56
10	16
17	13
24	8
Oct. 1	2
8	1
15	3
Total	248

* Supplied by Massachusetts Division of Livestock Disease Control. These figures are incomplete. Additional cases are being added to the list as rapidly as investigations justify their inclusion.

The disease appeared to be unusually fatal, very few recoveries being reported. It is estimated that well over 90 per cent of the horses affected have died. The eastern strain has been isolated from the brains of 6 horses. It is definitely known, therefore, that the disease in Massachusetts in both man and horse is due to the eastern strain. Schoening [10] has just been able to produce the disease in a horse with a virus from one of the human cases.

Kelser [3] and other workers have demonstrated that several varieties of Aedes mosquitoes can transmit either the eastern or western strain of the virus in laboratory animals. Three of the varieties (*Aedes solicitans, Aedes vexans,* and *Aedes cantator*) are usually found in considerable numbers in Massachusetts, and a fourth (*Aedes dorsalis*)

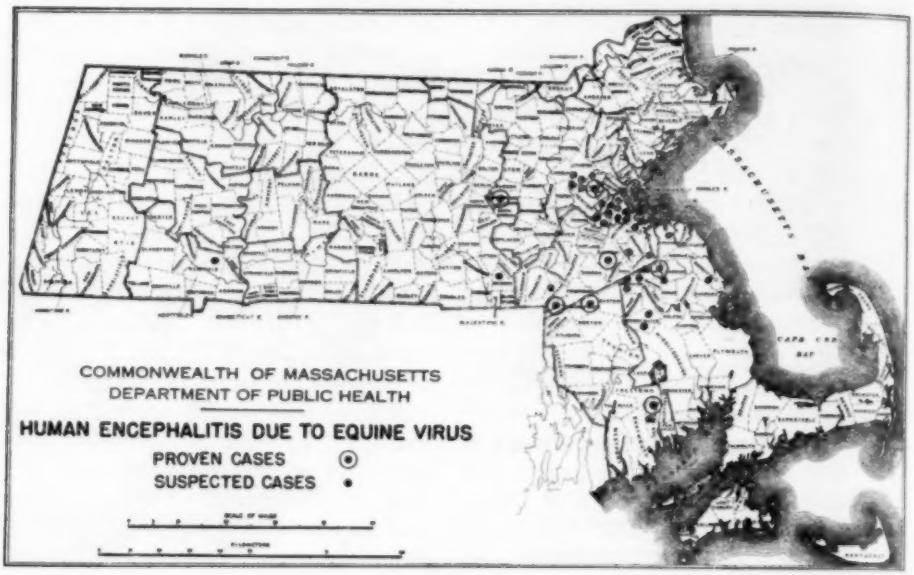


TABLE II

Encephalomyelitis in Horses

Attack Rate by Counties *

	Horses	*Cases*	*Attack Rate*
Barnstable	278	0	
Berkshire	2,960	0	
Bristol	2,647	95	3.6
Dukes	123	0	
Essex	2,467	4	.16
Franklin	2,392	0	
Hampden	2,119	0	
Hampshire	2,625	1	.04
Middlesex	3,887	26	.7
Nantucket	45	0	
Norfolk	1,698	51	3.0
Plymouth	1,393	58	4.2
Suffolk	815	2	.2
Worcester	5,430	11	.2
	28,879	248	

* Compiled from figures supplied by the Massachusetts Division of Livestock Disease Control

has been reported occasionally. If the mosquito is the vector of the natural infection in horses, the spread of the disease in the state can easily be accounted for once a case is introduced.

DISTRIBUTION OF HUMAN CASES

It is, of course, impossible at present to state how many cases of encephalitis due to the equine virus have occurred in the state during the outbreak. Some 38 cases have been under investigation. These are being classified into 4 groups as information becomes available:

I. Cases proved by isolating the virus from brain tissue taken at post-mortem. Thus far, 8 cases * have been so identified.

II. Cases in which the gross and microscopic pathology is characteristic. Including the 8 cases from which virus was recovered, fifteen cases already examined fall into this group.

III. Recovered patients who show neutralizing antibodies in the blood. Specimens have been collected from several individuals who have survived illnesses in which symptoms compatible with the disease were observed. Four of these have shown high titers of neutralizing antibodies, two were negative and the remainder have not yet been examined.

IV. Patients who have died without an autopsy, but in whom the clinical picture seems suspicious. Additional information on these cases may come from the examination of bloods taken from contacts. If neutralizing antibodies are found, infections caused by the virus in the family will be indicated.

Theoretically there should possibly be a 5th group: cases from which the virus is isolated from the blood or

* Four of these died at the Haynes Memorial Hospital, 2 at the Children's Hospital, 1 at the Truesdale Hospital, Fall River, and 1 at St. Elizabeth's Hospital, Boston.

spinal fluid early in the disease. So far, all specimens of this kind have failed to yield a virus. Meyer [11] and Ten Broeck [12] and their coworkers have observed that the virus is found in the blood of experimentally inoculated animals during the period of invasion and rise in temperature, but disappears before any symptoms are observed. Virus has not been recovered from naturally infected horses. It seems unlikely, therefore, that human cases will be seen early enough to obtain virus from the blood.

It is quite certain that some of the cases under investigation will have to be thrown out either because another diagnosis will be established or because evidence will not be sufficient to classify them into any of the 4 groups. This should be borne in mind in interpreting the following tables.

It will be noted (see maps) that there was a marked concentration of cases within the area where the equine disease was prevalent. Search was made among hospitals and physicians in other parts of the state to make sure that cases were not being overlooked elsewhere, but no additional ones were found. The earliest cases under investigation had onsets (Table III) early in August and the peak occurred early in September, a week later than the peak of the disease among horses.

TABLE III

Human Cases under Investigation

Dates of Onset

Week Ending	*Suspected Cases*	*Proved Cases*
Aug. 13	1	0
20	1	0
27	4	0
Sept. 3	9	4
10	8	2
17	6	1
24	4	0
Oct. 1	4	1
8	..	..
15	1	..
Totals	38	8

The cases are fairly evenly divided between the sexes (Table IV). The age distribution, on the other hand, is quite striking. Children under 2 years seem particularly vulnerable, 37 per cent of the cases being in that group. One-half were under 5, and 69 per cent under the age of 10.

The families in which cases have occurred have been visited and epidemiological records obtained. Suspicious illnesses have occurred in some, but multiple or secondary cases of frank disease in families have not been found.

TABLE IV

Human Cases under Investigation

Age and Sex

	Suspected Cases						
	Male		*Female*		*Total*		
Age	*Cases*	*Deaths*	*Cases*	*Deaths*	*Cases*	*Deaths*	*Proved Cases*
Under 1	3	2	5	4	8	6	1
1	1	..	5	3	6	3	2
2	2	2	1	..	3	2	1
3	..	..	1	1	1	1	..
4	..	..	1	1	1	1	..
0–4	6	4	13	9	19	13	4
5–9	6	2	1	0	7	2	2
0–9	12	6	14	9	26	15	6
10–19	2	2	3	3	5	5	1
20–29	..	..	1	0	1	0	..
30–39	..	..	..	0	..	0	..
40–49	..	..	1	1	1	1	..
50–59	4	3	1	1	5	4	1
Totals	18	11	20	14	38	25	8

No connection between cases, indicating contact infection, has been traced. Contact with horses has been only casual in many of the cases and no contact at all can be discovered in others. No epidemics among small animals have been observed in the vicinity of the households. Rhode Island Red chickens were found at, or in the vicinity of, many households but, since a large proportion of the cases lived in the more sparsely settled areas, this is probably to be expected. Practically every family had taken trips to nearby communities on motor rides, picnics, or visits to beaches.

Mosquitoes were unusually prevalent this summer because of heavy rains in July, and there is a universal history of mosquito bites. In a few cases, unusual reactions to such bites have been observed. This probably means that unusual varieties of mosquitoes were present this year since no local reactions due to the equine virus have as yet been described as occurring.

CLINICAL DESCRIPTION OF CASES *

The following summary gives the most common symptoms and signs which characterized the disease as seen at the Boston Children's Hospital and the Haynes Memorial Hospital. Cases occurring in other hospitals were similar in most details.

The onset in infants was sudden, with fever, irritability or drowsiness, cyanosis, and convulsions. In older children and in the one adult the symptoms were of slower onset, from 4 to 10 days. In 2 cases there was a definite remission of the symptoms lasting for 1 day. Headache, frontal in character, and dizziness were the first complaints in the older patients. In 2 infants diarrhea preceded the other symptoms, while vomiting occurred in half of the cases. All patients were semi-comatose to comatose on admission, and the majority showed continued tremors or muscular twitchings. Rigidity of the neck was a constant feature, as was a tense anterior fontanelle in the infants.

Evidences of an upper respiratory infection, *e.g.*, pharyngitis and otitis media simplex, were found in few of the cases. The suppression of the cutaneous reflexes was constant in the comatose patients, while the Kernig and kindred signs varied markedly. Facial palsies were seen in 3 cases, one of which had in addition a hemiplegia.

Outside of the fact that the pupils reacted sluggishly to light and one patient complained of photophobia, no abnormal eye findings were noted.

The temperature was invariably high, 102 to 104°, and in the fatal cases continued to rise. Where recovery took place the fever fell by lysis, becoming normal in 4 or 5 days.

The spinal fluid showed increased pressure, average 240 mm., hazy to ground-glass in appearance; the cell count varied from 200 to 2,000, of which 60–90 per cent were polys. Total protein was high, 95–185 mg.; sugar normal or slightly increased. Smears and cultures showed no organisms.

The blood showed the same polymorphonuclear response. The white count varied from 14,600 to 65,900, the percentage of polys from 75 to 90. The counts above 35,000 were in children who also had whooping cough.

When the patient lived over 2 or 3 days, there was a drop in both the spinal fluid and white blood counts, with a change to the mononuclear type of cell.

Convulsions and muscular twitchings marked the course of the disease. In the infants a peculiar edema developed about the eyes and in the upper extremities. Cyanosis was marked in all cases.

Deep coma from which the majority

* This summary was obtained from Dr. Charles F. McKhann and Dr. E. C. Smith.

of patients never aroused developed shortly after admission. When a patient survived the acute stage, coma and more or less rigidity of the muscles persisted for many days. An occasional patient showed gradual but slow improvement, returning apparently to normal.

Some cases suspected of being due to the virus have made complete recoveries, but it appears that certain other cases will show paralyses, mental changes, and other permanent residuals.

GROSS AND MICROSCOPIC PATHOLOGY *

Severe edema and congestion of the brain and cord, flattening of the convolutions and the formation of pressure cones in the cerebellum were conspicuous gross findings. On microscopic examination all parts of the brain showed some degree of involvement, with maximum changes in the brain stem. The lower cord was rarely involved except for edema and congestion. The anterior horn cells were spared.

The microscopic changes may be divided into several groups: (1) perivascular accumulations of large numbers of polymorphonuclear and large mononuclear cells; (2) diffuse slight infiltration of the meninges by the same types of cells; (3) numerous scattered focal areas of nerve cell destruction with infiltration by polymorphonuclear and microglial cells; and (4) small thrombi in vessels which often exhibited intramural degeneration and fibrin deposition.

The predominant type cell in the exudative response changed to the large mononuclear cell as the acute reaction subsided in cases where 6 to 20 days passed between the onset of important symptoms and death. After the longer duration of the disease, the perivascular infiltration and meningeal reaction almost disappeared, the areas of neuronophagia were less prominent, and the main picture became one of removal of debris and repair.

No bacteria were found by cultural methods or by histologic examination of the brain with the aid of appropriate stains in one patient who died 48 hours after the onset of symptoms.

Widespread congestion was present in the viscera. Numerous small thrombi were found on microscopic examination in many organs of the body. No bacteria could be demonstrated in relation to these thrombi. Severe pulmonary edema and congestion, probably secondary to the inflammatory process in the brain stem, were present in patients in whom no secondary bacterial infection could be demonstrated.

In summary, examination of the central nervous system demonstrated a severe, diffuse acute meningo-encephalitis, characterized chiefly by an intense polymorphonuclear and mononuclear cell infiltration in the perivascular spaces and to a minor degree in the meninges, and by widespread destruction of nerve cells.

DISCUSSION

As early as 1931, Meyer [5] suggested the possibility of humans contracting the equine disease. He noted in 3 individuals illnesses suspected of being due to the virus. The brief account of symptoms and findings in the fatal case is consistent with the clinical picture seen in the Massachusetts cases, particularly the finding of polymorphonuclears in the spinal fluid. The 8 cases in Massachusetts, however, are the first human infections definitely proved to be due to the equine virus. An entirely new public health problem has been opened up and the equine disease assumes an added importance.

The disease in the severer form is sufficiently different from the usual varieties of encephalitis to be recognized clinically. If some of the milder cases under investigation prove to be

* This summary was obtained from Dr. Sidney Farber.

due to the same virus, and particularly if the existence of subclinical infections can be established, the recognition of all cases will be difficult unless laboratory means of verifying the diagnosis can be found. A routine test within the scope of the public health laboratory would be invaluable. Whether the neutralization test or some similar procedure will be the solution is yet to be demonstrated.

A number of other problems in regard to the disease await elucidation. We need to know if other reservoirs beside the horse are important. In fact, Ten Broeck [12] and his coworkers suggest that the horse may not be the primary host, both because the disease is so highly fatal and because the virus disappears from the blood so early. Fothergill [13] has just isolated the eastern virus from a dead pigeon from an area where many pigeons have been dying this summer. It yet remains to be satisfactorily demonstrated that the mosquito transmits the natural infection among horses. The importance of other insects, especially the recently incriminated tick, as vectors of the disease awaits investigation.

The need of having all cases of encephalitis reported to health departments is emphasized by the presence of the equine infections in humans. The Massachusetts Department of Public Health has now made all cases of "Infectious Encephalitis" reportable instead of the former designation of "Encephalitis Lethargica."

SUMMARY

1. Eight cases of human encephalitis have been proved to be due to the eastern virus of equine encephalomyelitis.

2. The clinical picture and pathological findings in these cases appear to be sufficiently characteristic to make recognition of the disease possible.

3. While young children seem to be particularly vulnerable, adults are occasionally affected.

4. The case fatality appears to be high; 25 of the 38 cases under investigation died.

5. The attack rate among horses was low (3.5 per cent) but the case fatality was high (over 90 per cent).

REFERENCES

1. Fothergill, L. D., Dingle, J. H., Farber, S., and Connerley, M. L. Human Encephalitis Caused by the Virus of the Eastern Variety of Equine Encephalomyelitis. *New Eng. J. Med.*, 219:411 (Sept.), 1938.

2. Webster, L. T., and Wright, F. H. Recovery of Eastern Equine Encephalomyelitis Virus from Brain Tissue of Human Cases of Encephalitis in Massachusetts. *Science*, 88:305–306 (Sept.), 1938.

3. Kelser, R. A. Transmission of the Virus of Equine Encephalomyelitis by *Aedes Taeniorhynchus*. *J. Am. Vet. M. A.*, 92:195–203, 1938.

4. Meyer, K. F., Haring, C. M., and Howitt, B. The Etiology of Epizoötic Encephalomyelitis of Horses in the San Joaquin Valley. *Science*, 74:227–228, 1931.

5. Meyer, K. F. A Summary of Recent Studies on Equine Encephalomyelitis. *Ann. Int. Med.*, 6:644–654 (Nov.), 1932.

6. Larcell, O., Haring, C. M., and Meyer, K. F. Histologic Changes in Central Nervous System following Encephalomyelitis (in Horses). *Am. J. Path.*, 10:361–374, 1934.

7. Ten Broeck, C., and Merrill, M. H. A Serological Difference between Eastern and Western Equine Encephalomyelitis Virus. *Proc. Soc. Exper. Biol. & Med.*, 31:217–220 (Nov.), 1933.

8. Howitt, B. F. Immunological Study in Laboratory Animals of Thirteen Different Strains of Virus. *J. Immunol.*, 29:319–341 (Oct.), 1935.

9. Nicolau, S., and Galloway, I. A. Borna Disease and Enzoötic Encephalomyelitis of Sheep and Cattle. Med. Research Council, *Report No. 121*, 1928–29, pp. 7–90.

10. Schoening, H. W., Giltner, L. T., and Shahan, M. S. Equine Encephalomyelitis Produced by Inoculation of Human Encephalitis Virus. *Science*, 88:409–410 (Oct.), 1938.

11. Meyer, K. F., Wood, F., Haring, C. M., and Howitt, B. The Susceptibility of Non-immune and Hyperimmunized Horses and Goats to Eastern, Western and Argentine Virus. Proc. *Soc. Exper. Biol. & Med.*, 32:56–58, 1934–35.

12. Ten Broeck, C., Hurst, E. W., and Traub, E. Epidemiology of Equine Encephalomyelitis in the Eastern United States. *J. Exper. Med.*, 62:677–685 (Nov.), 1935.

13. Fothergill, L. D., and Dingle, J. H. Paper in press.

NOTE: Articles have been chosen partly because of detailed bibliographies.

Rocky Mountain Spotted Fever and Tick Survey in Iowa*

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ROCKY Mountain spotted fever, now known to have widespread distribution in the United States, has in recent years assumed greater significance for the northern as well as the southern central states.

REPORTED IN CENTRAL STATES

Hampton and Eubank [1] of the U. S. Public Health Service, recently reported that during the 5 year period 1933–1937, cases of spotted fever totalling 2,190 were notified for the United States as a whole. The Mountain and Pacific states reported 65.5 per cent and the South Atlantic group of states, 27.4 per cent of all cases. Of the remaining 7.1 per cent, 5.4 per cent occurred in the North and South Central States, and 1.7 per cent in the New England and Middle Atlantic states. In the period 1933–1937, the East and West North Central states reported 80 cases with 17 deaths, as compared with 36 cases and 10 deaths in the East and West South Central states. The 4 groups comprising the Central states, reported 47 cases in 1938 (to September 1), representing more cases than have been reported in any previous year.

The first case of Rocky Mountain spotted fever in Iowa was officially reported to the State Department of Health in June, 1933, by C. N. Freligh, M.D. of Waucoma, Fayette County. Much credit is due to the attending physician who is first to recognize a disease which previously was not known to occur in his state. To date, 38 cases of spotted fever have been officially reported in Iowa.

CLINICAL MANIFESTATIONS

Excellent accounts of the clinical manifestations of Rocky Mountain spotted fever have been published in recent years by Rumreich, Dyer, and Badger [2] of the U. S. Public Health Service, by R. R. Parker,[3] Director, Rocky Mountain Laboratory of the U. S. Public Health Service at Hamilton, Mont., by Litterer [4] in Tennessee, by Stroy,[5] Floyd [6] and others in Iowa, and by many other physicians and investigators. In the cases studied in the state, onset of illness has usually been sudden, sometimes beginning with a chill. Symptoms and signs include fever, headache, vomiting, abdominal pain, neck stiffness, weakness or prostration, and drowsiness which may progress to coma. On the third day, as a rule, reddish spots, irregular in outline and varying in size from one to several millimeters, appear about ankles, wrists, and forehead, later extending to the body and becoming generalized. The color of the lesions deepens with rise in temperature. Macules later become

* Read before the Epidemiology Section of the American Public Health Association at the Sixty-seventh Annual Meeting in Kansas City, Mo., October 26, 1938.

petechial in character and remain visible for 1 week to 10 days or longer. Brownish discoloration occurs before the eruption fades and disappears. Increased reflexes and ankle clonus are, when present, significant findings referable to the central nervous system.

Some of the cases have been of comparatively mild, others of severe type. Nine deaths have been recorded in Iowa during the past 6 years, a case fatality rate of nearly 24 per cent. Three deaths from this cause occurred in 1937, no fatalities in 1938. One patient recovered from the acute illness, but developed epileptiform attacks, a sequela which ran a progressive course with fatal outcome 3 years after onset of symptoms.

In the 38 cases reported, clinical findings were confirmed in 27 instances by positive Weil-Felix agglutination tests, varying in titer from 1–160 to 1–1,280. In 4 cases, diagnosis was based on characteristic clinical findings plus the history of a tick having been removed from the body shortly before illness. Diagnosis in the remaining 7 instances, was based on the clinical picture, together with the history of possible exposure to tick bite. An additional aid in recognition of some of the early cases which occurred, was the demonstration of immune substances in the patient's serum, by means of the protection test, completed in the Rocky Mountain Laboratory of the U. S. Public Health Service.

EPIDEMIOLOGICAL FACTORS

Among 38 cases reported to the Iowa State Department of Health in the 6 year period 1933–1938, 25 patients were males, 13 were females. Nearly half of the cases were children between 1 and 9 years; nearly a third were persons from 40 to 80 years of age. The youngest patient was 17 months, the oldest 79 years.

Four of the 38 patients had onset of symptoms in May, 18 in June, 11 in July, 4 in August, 1 in September. Onset of illness of the earliest case in the season was May 16, of the latest in the season, September 6.

Cases were reported from 18 counties, representing widely scattered sections of northeastern, eastern, southeastern, southern, southwestern and central Iowa.

That Rocky Mountain spotted fever represents a distinctively rural health hazard is indicated by the cases thus far reported. In the series of 38 patients under consideration, exposure in 32 occurred on a farm or in a rural area, including 2 boys who lived in town but were visiting relatives on the farm at the time of illness. Five other patients were urban residents who gave a history of direct or possible exposure to ticks. One patient was a packing house employee who might have been exposed to ticks through the handling of hides or through proximity of his residence to open country.

OCCURRENCE OF MULTIPLE CASES

On 3 occasions, 2 members of a family had onset of illness at the same time. In a 4th instance reported by Stroy,[5] 3 children in the same farm household took sick within a few days of each other. The youngest child died, the second was severely ill, while the oldest had a mild attack, the nature of which under other circumstances might easily have been overlooked.

In 1937, an outbreak of Rocky Mountain spotted fever occurred among Indians on the Sac and Fox Reservation in Tama County. Six cases were reported within several weeks by Ira Nelson and A. A. Pace, physicians in the Indian service. Two of the patients were Indian women, both of whom recovered; 4 cases were children, of whom 2 died. All the patients had been directly exposed during the days immediately preceding illness, to the common dog tick, *Dermacentor variabilis*.

Control measures on the reservation were directed primarily against dogs, many of which were heavily infested with ticks. Special efforts were put forth to rid dogs, in so far as possible, of tick infestation. Treatments with spotted fever vaccine were administered to many of the 450 Indians. Prior to the opening of the tick season in 1938, control measures were renewed and spotted fever vaccine was given to about a third of the Indians, including most of the children. The vaccine was forwarded through courtesy of Dr. Parker, from the Rocky Mountain Laboratory at Hamilton, Mont.

RESULTS OF TICK SURVEY

During 1936–1937, a tick survey was carried out under auspices of the Iowa State Department of Health, instituted by Walter L. Bierring, M.D., Commissioner, in collaboration with Carl J. Drake, State Entomologist, and R. R. Parker, Director of the Rocky Mountain Laboratory.

In June and July, 1936, ticks were collected by Dean Eckhoff, Assistant Consulting Entomologist, in 35 counties of the state. Of the ticks forwarded from Iowa to the Montana laboratory, about 350 arrived in good condition. The report from Dr. Parker [7] stated that all specimens belonged to the species *Dermacentor variabilis,* or the common dog tick. Tests carried out on guinea pigs and consisting of the injection of tick substance from 30 groups of ticks, proved negative for evidence of spotted fever virus. *Bacterium tularense* was recovered from ticks collected in 3 counties in southeastern Iowa, 2 of the 3 batches of ticks having been removed from dogs.

The tick survey was resumed in the late spring and early summer of 1937, and included 18 counties in the southern half of the state. Ticks collected by dragging the vegetation with canvas and designated "drag" ticks, totalled 3,026. Engorged ticks removed, chiefly from dogs but also from cows, horses and smaller wild animals, numbered 2,832. The conduct of the survey afforded opportunity to make some interesting observations pertaining to habits of the American dog tick and regarding some of the animal hosts preferred by the nymphal and adult ticks. Mr. Eckhoff's report reads in part as follows [8]:

> Concerning the host I can positively list rusty fox squirrel, cottontail rabbit, and woodchuck as being host to the last stage nymphal and adult ticks in Iowa. Several smaller mammals were examined but I did not find any stage of the tick. The domestic animal host list includes horse, cow, sheep, goat, dog, and infrequently, cat.

Mr. Eckhoff observed that ticks were seldom found in the woods away from paths or roads but

> . . . were concentrated on blue grass, sweet clover, weeds and shrubs growing through the dead leaves in roadside ditches.

It is significant that among the ticks collected in Iowa during 1937 and tested in the Montana laboratory, ticks from the Tama Reservation and from the farm in Clarke County where 3 children in the same home developed spotted fever, proved to harbor the virus of Rocky Mountain spotted fever.

RESULTS OF WEIL-FELIX TESTS

Agglutination Tests on Human Serum—In connection with the outbreak of Rocky Mountain spotted fever which occurred among the Indians in Tama County in 1937, efforts were made to determine whether apparently healthy persons might show evidence of latent infection resulting from exposure to spotted fever virus. The Weil-Felix test with the use of *B. proteus* X_{19} as antigen, was performed on 189 serum specimens obtained from Indian men, women, and children, several weeks following the outbreak. Although 4 serum specimens showed agglutination

in the 1–80 dilution, these reactions were not sufficiently high to be regarded as diagnostic. The Weil-Felix tests were performed under the capable direction of I. H. Borts, M.D., Assistant Director of the State Hygienic Laboratory.

Agglutination Tests on Serum of Dogs—A house-to-house canvass on the Indian Reservation was conducted by Frank J. Condon, M.D., Medical Director of Health District No. 2, assisted by Mr. Eckhoff. Among about 100 dogs belonging to the Indians, 60 were found to be infested. Ticks totalling 1,880 were removed from all of the dogs. Blood specimens were taken from 80 dogs and sent to the State Hygienic Laboratory. The antigens used by Dr. Borts for the Weil-Felix tests included the Washington strain of proteus X_{19} and live strains of OX_{19} Parker and OX_2 Parker. The OX_2 antigen is regarded as being very sensitive, yielding higher titers than other strains. Although 5 of the sera produced agglutination of the Parker OX_2 antigen in dilutions 1–160, reactions with the two other strains were not sufficiently high to be regarded as diagnostic. Six of the serum specimens showed a doubtful reaction for tularemia 1–40 and two specimens were positive for this infection in the 1–80 dilution.

DISCUSSION

In the 38 cases of Rocky Mountain spotted fever reported in Iowa in recent years, there is evidence in 14, or 37 per cent of the cases, to indicate that dogs play an important part in relation to the spread of spotted fever from infected ticks to human beings. Dogs serve as a drag net in gathering ticks and bringing them close to children and adults in the home. As an example, in an Indian home in which 2 children developed spotted fever, ticks numbering 275 were taken from 4 dogs belonging to the family. Experiments reported by Badger[9] show that dogs are susceptible to spotted fever virus. It is possible that further investigation may demonstrate that the dog as a host of *Dermacentor variabilis*, plays a more significant part than is now realized, in the transmission of Rocky Mountain spotted fever to man.

SUMMARY AND CONCLUSIONS

1. More complete reporting of Rocky Mountain spotted fever is dependent upon attending physicians who are spotted fever conscious and upon repeated laboratory tests for confirmation of the clinical diagnosis.

2. Educational measures need to be continued, so as to make people who live in or frequent rural areas, more tick conscious during the tick season.

3. Results are reported of a tick survey in Iowa.

4. More precautions need to be exercised to minimize the hazard of transmission of tick-borne disease through the agency of tick infested dogs.

5. It is desirable that there be further study of the common dog tick, *Dermacentor variabilis* and of the epidemiology of Rocky Mountain spotted fever in the Central states.

NOTE: Special acknowledgment is made to R. R. Parker, Director, Rocky Mountain Laboratory of the U. S. Public Health Service, for his willingness to undertake the expensive and laborious task of testing some of the ticks collected in Iowa, for sending spotted fever vaccine and for his valuable suggestions relating to the subject of Rocky Mountain spotted fever.

REFERENCES

1. Hampton, Brock C., and Eubank, Harry G. Rocky Mountain Spotted Fever. *Pub. Health Rep.*, 53:984–990 (June 17), 1938.

2. Rumreich, A., Dyer, R. E., and Badger, L. F. The Typhus Rocky Mountain Spotted Fever Group. *Pub. Health Rep.*, 46:470–480 (Feb. 27), 1931.

3. Parker, R. R. Rocky Mountain Spotted Fever. *J.A.M.A.*, 110:1185–1188 (Apr. 9), 1938; and 110: 1273–1278 (Apr. 16), 1938.

4. Litterer, William. Rocky Mountain Spotted Fever (Eastern type) in the Southern States. *South. Med. J.*, 26:407–415 (May), 1933.

5. Stroy, H. E. Rocky Mountain Spotted Fever. *J. Iowa State Med. Soc.*, 27:293–294 (July), 1937.

6. Floyd, M. L. Rocky Mountain Spotted Fever. *Ibid.*, 294–296.

7. Parker, R. R. Communication to the Iowa State Department of Health.

8. Eckhoff, Dean E. *Report of Tick Survey to the Iowa State Department of Health.*

9. Badger, L. F. Rocky Mountain Spotted Fever. Susceptibility of the Dog and Sheep to the Virus. *Pub. Health Rep.*, 48:791–795 (July 7), 1933.

The Probable Typhoid Carrier Incidence in Mississippi*

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THIS paper is a part of the result of an honest effort to determine what the typhoid fever control problem is and may be expected to be in Mississippi. For this effort to be even partially successful, it was desirable to know the approximate incidence of typhoid carriers in Mississippi. No refined statistical maneuvers were used in coming to conclusions, and it is admitted that more accurate methods might have been used. Facts presented were accumulated over a period of 4 years' experience in doing the proverbial "shoe-leather," or I might say cotton-field, epidemiological studies on typhoid fever in Mississippi.

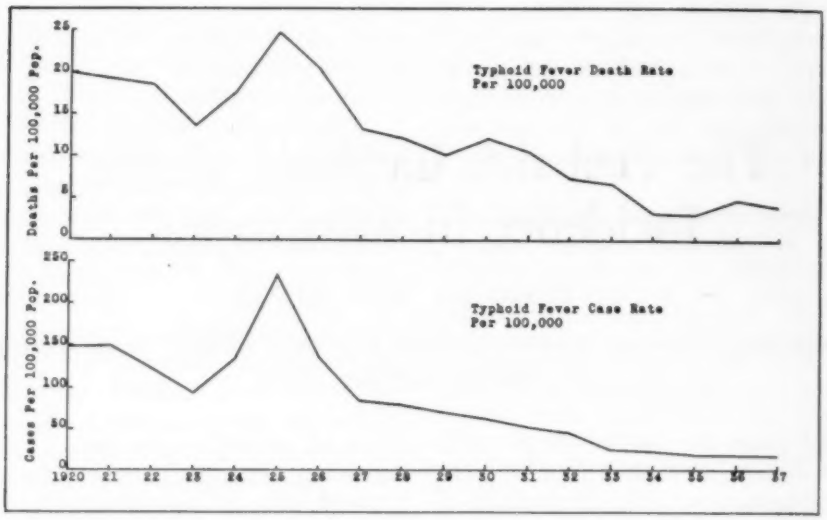
It has long been recognized that typhoid carriers play an important part in maintaining the incidence of typhoid fever in a given area. A typhoid fever control program to be ultimately successful must embrace thorough persistent search for carriers and provision for continued adequate supervision of them. Plans for a control program should be based upon several factors, among which are current and past incidence of the disease and incidence of typhoid carriers. Obviously the incidence of typhoid carriers in an area is dependent upon the past prevalence of typhoid fever in that area. The difficulty is to determine what the actual incidence in the area has been and to know just what percentage of those having the disease become permanent carriers. Neither of these problems has been satisfactorily solved.

Mississippi is in the heart of the old South, along the east bank of the lower Mississippi River. It has a population of slightly over 2,000,000 of which about 49 per cent is white and 51 per cent colored. It is primarily an agricultural area in which cotton production predominates. Lumber manufacture has been and remains a prominent source of income. A very large percentage of the population lives in rural areas and small towns of less than 1,000 population. Because of the relative simplicity in methods of living epidemiological problems are much less complex than in metropolitan areas. About 30 per cent of the population has some type of comparatively safe excreta disposal. A smaller percentage has protected water supply.

The reported incidence of typhoid fever in Mississippi is indicated in Table I and Figure I which show the reported case and death rates per 100,000 population from 1920 to 1937.

* Read before the Epidemiology Section of the American Public Health Association at the Sixty-seventh Annual Meeting in Kansas City, Mo., October 26, 1938.

FIGURE I



Typhoid Fever Case and Death Rates per 100,000 in Mississippi, 1920 - 1937

Experience in epidemiological study of typhoid fever in Mississippi leads the writer to believe that the actual incidence of the disease has been between 30 and 40 per cent higher than is indicated by reports.

TABLE I

Typhoid Fever Cases and Deaths, Case and Death Rates per 100,000 Population in Mississippi, 1920–1937

Year	Cases	Case Rates	Deaths	Death Rates
1920	2,644	147.8	342	19.2
1921	2,665	147.9	348	19.9
1922	2,230	121.5	337	18.4
1923	1,690	91.0	252	13.6
1924	2,470	131.4	330	17.5
1925	4,415	232.0	470	24.6
1926	2,613	135.7	390	20.3
1927	1,597	81.9	255	13.1
1928	1,517	77.0	237	12.0
1929	1,315	65.9	197	9.9
1930	1,239	61.4	238	11.9
1931	1,059	51.9	211	10.4
1932	928	45.1	145	7.1
1933	529	25.4	135	6.5
1934	490	23.0	66	3.1
1935	366	17.3	61	2.9
1936	377	18.2	96	4.7
1937	344	15.8	77	3.8

Physicians in Mississippi have looked upon typhoid fever as a disease which always causes one to be ill for several weeks. There is no question that many people have typhoid fever with only slight indisposition for a few days. Such cases have either not been seen by a physician or have not been diagnosed.

In 1937, 82 cases of typhoid fever were definitely diagnosed in 11 counties having full-time local health service. Of these 82 cases, 32 were located and diagnosed through the county health officers' epidemiological studies of cases reported by physicians. In other words, over 39 per cent of that group of cases would not have been reported without the investigative efforts of health officers. This type of work has developed within the past 4 years. This is a very definite indication that the actual typhoid fever incidence has been and remains much higher than the reported incidence would indicate.

The method chosen to determine the approximate typhoid carrier incidence is briefly described together with the

TABLE II

Total Surveyed by Age Groups and Race

	0–4	*5–14*	*15–24*	*25–34*	*35–44*	*45–54*	*55 and Over*	*Total*
White	1,150	2,439	1,812	1,308	1,082	774	809	9,374
Colored	1,253	2,451	1,868	1,281	956	728	666	9,203
Total	2,403	4,890	3,680	2,589	2,038	1,502	1,475	18,577

conclusions reached. The conclusions are based upon the estimated number of people now living in Mississippi who give a history of typhoid fever and the percentage of the cases resulting in a permanent carrier state. To determine the number of people now living with a typhoid fever history, as diagnosed by physicians, a random sample of homes was surveyed, involving 18,577 people in 16 counties with a total population of 603,000. The homes surveyed were without regard to knowledge of previous incidence in the communities. For each county, the survey was planned so as to reach about 3 per cent of the white and colored population respectively. Urban and rural populations were surveyed so as to include proportionate shares of these groups. As nearly as possible, every fifth home was surveyed in several communities in each county and in sections of towns in these counties. It was impossible to make a true random sampling survey, but efforts were made to approach this as nearly as possible.

A responsible person, usually the wife, was questioned as to the typhoid history of each member of the family. Only those were counted as having had typhoid fever who stated that their physician made this diagnosis.

Figure II indicates the area covered. Counties surveyed were those in which other work was being done, the survey being a secondary objective.

Table II shows the number of people surveyed by age group and race.

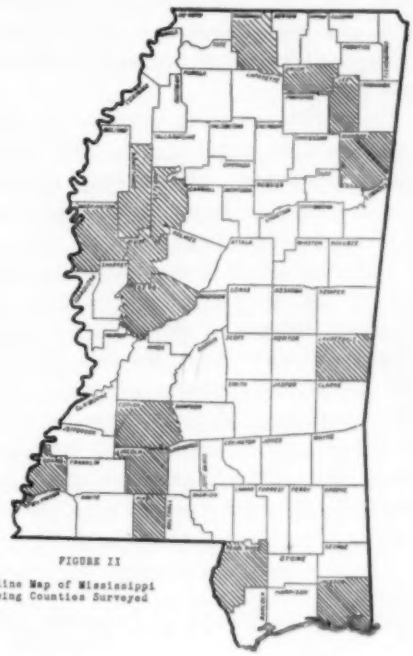


FIGURE II

Outline Map of Mississippi Showing Counties Surveyed

Table III gives the number of each age and race group with a history of typhoid fever.

TABLE III

Number of Those Surveyed with History of Typhoid Fever

	0–4	*5–14*	*15–24*	*25–34*	*35–44*	*45–54*	*55 and Over*	*Total*
White	1	25	46	105	172	151	217	717
Colored	7	108	149	146	158	139	123	830
Total	8	133	195	251	330	290	340	1,547

TABLE IV

Per cent of Each Age and Race Group with History of Typhoid Fever

	0–4	5–14	15–24	25–34	35–44	45–54	55 and Over
White	0.089	1.39	2.53	8.00	15.9	19.5	26.7
Colored	0.55	4.00	8.00	11.39	16.5	19.09	18.62

Table IV shows the per cent of each age group by race, with a history of typhoid fever.

Table V gives the estimated population of the state as of July 1, 1935, by age groups and race, based upon the 1930 Census Bureau figures and the arithmetic increment from 1920 to 1930; also the per cent and number of each age group and race of the state having a history of typhoid fever and now living.

From the foregoing survey and calculations it is found that in 1935 there were living in Mississippi 183,230 people giving a history of typhoid fever as diagnosed by physicians.

This method of determining the number of living people with history of typhoid fever is liable to several sources of error—one, the fact that no one knows how many of those with history of typhoid fever were properly diagnosed. It is known that comparatively few physicians have used dependable laboratory diagnostic aids in dealing with typhoid fever. The Widal reaction has been largely depended upon and, in Mississippi, this has comparatively little diagnostic significence.

Experience leads to the conclusion that there have been many cases of typhoid fever that were not seen and reported by physicians. Another large group of cases were seen by physicians but diagnosed by nonspecific terms—such as colitis, flux, malaria fever, etc. It is believed that these two groups far exceed the cases classed as typhoid fever. This is more clearly indicated by the fact that less than 5 cases of typhoid fever for each typhoid fever death were reported in the period 1933 to 1937. It is believed that there are probably 12 to 14 cases per death rather than 8 as reported.

There is no definite proof that there is not a great deal of variation geographically, by race, or by severity of attack as to the percentage of cases developing the permanent carrier state. It is apparent, however, that much of

TABLE V

Age Group Distribution of Population and Recovered Cases of Typhoid Fever Now Living in Mississippi as of July 1, 1935

	White			Colored		
Age Group	*Population*	*Per cent History of Typhoid*	*No. Living Recovered Cases*	*Population*	*Per cent History of Typhoid*	*No. Living Recovered Cases*
0– 4	120,392	0.089	107	123,143	0.55	677
5–14	239,368	1.39	3,327	240,499	4.00	9,619
15–24	222,272	2.53	5,623	232,772	8.00	18,621
25–34	151,269	8.00	12,101	153,241	11.39	17,454
35–44	123,250	15.9	19,596	117,532	16.5	19,363
45–54	102,530	19.5	11,893	92,735	19.09	17,703
55 and Over	110,966	26.7	29,627	88,719	18.62	17,519
Total	1,070,047		82,274	1,048,461		100,956

the difference in opinion as to the percentage becoming carriers is due to difference in efficiency of laboratory technic, as well as many other factors too numerous to mention. It has been the experience of workers in Mississippi that results of examination of stool specimens for *B. typhosus* are dependent in no small degree upon the type and age of the specimen.

It is the policy of the Mississippi State Board of Health to class an individual as a permanent typhoid carrier only after securing at least two positive cultures as late as 1 year after onset of the disease. In the past 3 years 286 cases of typhoid fever were definitely diagnosed by finding *B. typhosus* in the blood, stool, or urine. Of the 286 cases 42 died, leaving 244 cases which were followed up with frequent release stool and urine cultures until at least two consecutive negative results were obtained, made not less than a week apart and after recovery. Eight of the 244 continued to excrete typhoid bacilli in stool as late as 1 year after onset, as a result of which they were listed as permanent carriers. Accordingly, 3.27 per cent of this group became permanent carriers.

Findings of different investigators have varied from less than 2 per cent to 7 per cent of recovered cases developing into the permanent carrier state. Several of the 244 cases excreted the organisms 3 to 9 months after recovery and ceased doing so as determined by 12 consecutive monthly specimens.

The survey indicated that there are at least 183,230 recovered cases of typhoid fever living in Mississippi. If we assume this is approximately correct and that 3.27 per cent of them became permanent carriers, there are now in Mississippi approximately 5,991 carriers who subject the rest of the population to constant danger by spreading typhoid organisms.

The above figures mean that for each 100,000 people of the 2,080,000 living in Mississippi there are about 288 typhoid carriers.

This, together with many other facts, indicates that the problem of typhoid fever control has not been solved nor will it be solved for many years to come.

SUMMARY AND CONCLUSIONS

1. A random survey of 18,577 people in 16 counties in Mississippi revealed that 1,547 gave a history of having had typhoid fever as diagnosed by physicians.

2. Those surveyed were classified by age group and race as to total number in each group, and number in each group giving history of typhoid fever. These classifications were used to determine the percentage in each age and race group with a history of having had typhoid fever. The percentages thus obtained were applied to the total age and race group populations of the state to find the total number of people now living in Mississippi with a history of typhoid fever. According to these calculations there are 183,230 people in the state with such history.

3. Of 244 proved cases of typhoid fever in Mississippi 8, or 3.27 per cent of the group, became permanent carriers and were excreting *B. typhosus* more than 1 year after onset. Applying this percentage to the total recovered cases living in the state, 183,230, there are about 5,991 typhoid carriers in the state at present, or 288 carriers per 100,000 population.

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OUR SIXTY-SEVENTH ANNUAL MEETING

MANY of us have visited Kansas City in the past. Those who had not done so were prepared by even the very imperfect sketch in our issue of August to be entertained and charmed. Not only were we not disappointed but our fondest expectations were more than fulfilled.

Our meeting place was the Municipal Auditorium, one of the largest and most perfectly arranged buildings of its kind in the country, with every facility for rooms, exhibitions, and entertainment. It is very near the leading hotels which furnished abundant accommodations for gatherings of practically any size. While the city possesses every convenience for a scientific or business meeting, the residential district, with its many parks, beautiful trees, and magnificent residences, adds a charm which none can ever forget.

As usual, a number of related societies met at the same time, such as the American School Health Association, American Social Hygiene Association, Association of Women in Public Health, Conference of State Laboratory Directors, Conference of State Sanitary Engineers, and the International Society of Medical Health Officers. Most of these had their special sessions the day before our Association convened, as well as a number of joint sessions with our sections.

The program of our own meeting was an interesting one. In the ten different sections of which our Association is composed, many subjects of great general public health interest were discussed by specialists. It may not be amiss to call particular attention to a few items, but this is done without any disparagement to other papers and these are mentioned simply because they contained something new. Perhaps the most important single item was the discovery that the virus of encephalitis of horses, at least one strain of it, was transmissible to man, and from Massachusetts we had a report from Dr. Feemster, of the State Department of Public Health, of seven human cases directly attributable to the virus from horses. The prevalence of encephalitis in horses in many parts of the country makes this of great importance. Notable also was the forthcoming new edition

of *Standard Methods for Milk Analysis,* which was discussed by Professor Breed at a special milk meeting on Friday.

Everyone knew that the meeting would be charged with intense interest over the National Health Conference held in Washington in July, at which the report and recommendations of the Interdepartmental Committee to coördinate health and welfare activities was made and discussed. A special session on the Public Health Aspects of Medical Care was held at which we were honored by the presence of Dr. Irvin Abell, President of the American Medical Association, who gave a paper explaining the standpoint of the medical profession. This meeting was an indication of the intense interest of our Association in the increase in public health consciousness which has been going on in professional bodies as well as among the public. At the meeting of the Governing Council this took the form of a resolution endorsing in general the recommendations made at the National Health Conference. The Association pledged itself to use all its resources and influence in aiding the governmental agencies in accomplishing these health objectives, and also instructed the Executive Board to appoint a committee of seven Fellows of the Association to coöperate during the coming year with the Interdepartmental Committee, the American Medical Association, the American Dental Association, the Conference of State and Provincial Health Officers, and other agencies, in putting these principles into effect. While we may discount some of the perfervid expressions of opinion on this action, there can be no doubt concerning its far-reaching importance.

On Thursday the Annual Banquet was held in the great Arena of the Auditorium, which on the floor and in the galleries can seat 15,000 people. At the Banquet there were more than 700 persons. Especial awards were announced, including the Health Conservation Contests Awards, following which a remarkable musical entertainment was given, featuring particularly the Indians from the Haskell Institute at Lawrence, Kans., and a Negro choir of some 80 members. One rarely hears more beautiful music than this choir produced.

We were particularly fortunate in having a large number of members and visitors from other countries, the Hawaiian Islands, Alaska, Canada, Puerto Rico, Mexico, and Cuba. Especially gratifying was the large number of our Canadian cousins, and among them we had the honor of entertaining Dr. A. Grant Fleming, Dean of the Faculty of Medicine of McGill University, Dr. John J. Heagerty, of the Department of Pensions and Public Health, Ottawa, and Dr. Adelarde Groulx, the Health Officer of Montreal, who has succeeded Dr. S. Boucher, who added so much to our meetings in the past. Our Canadian membership contributed not only to our pleasure but gave us a number of valuable scientific papers. From Cuba came General Domingo F. Ramos, formerly the Director of Health of that Island, and from Puerto Rico, Dr. Oscar Costa-Mandry. From Mexico we had Dr. L. Andreu Almazan, the Director of Health of that country, and seven of his staff. It was a great pleasure to welcome him, both officially and personally, to this, the first meeting of our Association which he has attended.

The hospitality of Kansas City is always notable. To Dr. Edwin H. Schorer, the genial Director of Health, without question the most efficient health officer Kansas City has ever had, everyone who attended the meeting is under a debt of gratitude. He was ubiquitous, always at the right spot at the right moment. Among the most delightful memories is the reception which he gave at his own residence.

At the last General Session we passed appropriate resolutions recognizing our reception by the officials of Kansas City and Kansas City in general, but we wish here once again to renew these expressions in public. The meeting was a great success from every standpoint, and we owe a debt of gratitude to our hosts.

EDWARD S. GODFREY, JR.

EDWARD Settle Godfrey, Jr., M.D., President-Elect, is a Western product. The second son of the late Brigadier-General Edward S. Godfrey, he was born, in 1878, at Fort Yates, N. D., then a small army post surrounded by the Standing Rock Indian Reservation. From the army post schools, in which his early education was begun, he finally reached Rutgers Preparatory School and the University of Virginia, from which he was graduated in medicine in 1900, interning for two years at the Germantown Hospital, Philadelphia.

His medical practice was begun at Bisbee, Ariz., a mining camp, site of the famous Copper Queen and Calumet and Arizona Mines. (Most of his friends, at one time or another, have been entertained by his stories of the mining camp days.) He practised later in Phoenix, Ariz. In 1908 he was appointed Superintendent of Public Health for the Territory of Arizona. In 1912 he was appointed school medical examiner for Phoenix public schools, and in 1914 City Health Officer.

Edward S. Godfrey, Jr., M.D.

In 1916 Dr. Godfrey went to the Illinois State Board of Health as epidemiologist, later becoming chief of the Bureau of Communicable Diseases. In 1917 he continued his Eastern migration, going to the New York State Department of Health, then being reorganized and expanded under the leadership of the late Dr. Hermann M. Biggs. Later he was director of the Division of Communicable Diseases for eleven years, becoming Assistant Commissioner for Local Health Administration in 1931 and, in 1936, following Dr. Parran's resignation to become Surgeon-General, Dr. Godfrey was appointed by Governor Lehman as State Commissioner of Health.

Dr. Godfrey has been a member of the Association since 1910, and a Fellow since 1922. He has been a member of the Governing Council since 1931. The same inquiring attitude and "healthy skepticism" which made him an outstanding epidemiologist has contributed to the value of his service, over a long period, as an active member and Fellow in the Association. As was said by the retiring president when Dr. Godfrey was elected, it was most appropriate that he should have been elected in Missouri, since one of his best known characteristics was his insistence on being "shown."

Dr. Godfrey was one of the founders of the Epidemiology Section of the A.P.H.A. and of the American Epidemiological Society. He was chairman of the former in 1930 and president of the latter 1933–1934. For several years he was Clinical Professor of Epidemiology in the College of Physicians and Surgeons, Columbia University. He has written extensively on subjects relating to health, his best known writings being in the field of epidemiology. His continual seeking after the practical application of epidemiological knowledge is perhaps best exemplified by his paper on the epidemiology of diphtheria, which appeared in the *Journal* in March, 1932.

JOHN SHAW BILLINGS

Born April 12, 1838

FOR the second time this year we commemorate the 100th anniversary of the birth of a great medical man of our United States Army, this time John Shaw Billings, who was born April 12, 1838. Some 34 of his 75 years of life were passed in the active service of the U. S. Army Medical Corps. Much could be said of his military experience and services during the Civil War. Upon his appointment as First Lieutenant and Assistant Surgeon in 1862 he was put in charge of the Cliffburne General Hospital in Washington, which he found in a dreadful condition with "no drainage whatever, no sinks, no water within half a mile," and very inadequate facilities, so that his very first service led him to the study and practice of preventive medicine and hygiene in which he was interested throughout his life.

However, his fame rests on his accomplishments in Washington, where he was ordered in August, 1864. In 1879, Congress created a National Board of Health under the threat of an epidemic of yellow fever, and Dr. Billings was made Vice-President. In 1880, he was made President of the American Public Health Association. His acumen was shown about this time when he said, in speaking of yellow fever, "The belief that disease ever spontaneously originates from combinations of filth, heat, moisture, and the presence of unprotected persons, is an exercise of pure faith with which science has nothing to do at present. . . ." Dr. Billings was one of the first men in this country to lay stress on vital statistics, and he always took a keen interest in the censuses of the United States. His first extensive report on vital and medical statistics was in connection with the Census of 1880, and these reports were continued in 1890, 1900, and 1910.

Dr. Billings took a great interest in the Army Medical Museum, which is now the largest institution of its kind in America and one of the greatest in the world. In December, 1883, the Museum and the Library were consolidated, with Dr. Billings in charge. His reputation, however, has been largely founded on the Surgeon General's Library and its *Index Catalogue*.[1] At the time he took charge, the Library contained 2,253 volumes and the first printed catalogue in 1865 was a little pamphlet of 31 leaves. It has now grown to 50 ponderous royal octavo volumes of the *Index Catalogue*, which Osler called "Billings's float down to posterity." It is said of the *Index Catalogue* that it marks an epoch in the development and improvement of medical literature, particularly in the United States, but it is recognized all over the world as one of the great pieces of bibliography. Indeed, Professor William Bullock, in 1935, said, "Among

catalogues, the Surgeon General's is regarded by the authorities at the British Museum as the greatest ever achieved." In 1879, Dr. Billings established the *Index Medicus,* another " monumental piece of medical bibliography "—merged in 1927 with the *Quarterly Cumulative Index.* It is not strange that he is generally considered the greatest medical bibliographer in the history of medicine.

Dr. Billings is known not only as a great bibliophile and bibliographer but as a librarian. After his retirement from the Army in 1895, he was asked to take charge of the consolidated Astor and Lenox libraries of New York with the Tilden Trust. This is one of the notable libraries of the country and advanced greatly in its usefulness to the public under the administration of Dr. Billings. The present Director of the New York Public Library says of him, " that in the field of librarianship he holds as high a rank as he did in the fields of medicine, of engineering, of statistics."

Dr. Billings held a number of positions, among which was Director of the Hygienic Laboratory of the University of Pennsylvania. He planned the original buildings of the Hospital of Johns Hopkins, where he is regarded as one of the " founding fathers of both the Hospital and the Medical School." Dr. Billings's papers on Medical Education and History of Medicine are especially noteworthy. He gave a course of lectures on the latter subject at Johns Hopkins in the autumn of 1877.

NOTE: The Johns Hopkins Medical Society and the Johns Hopkins Medical History Club held a joint meeting April 12, 1938, to commemorate the 100th anniversary of the birth of Dr. Billings. The Institute of the History of Medicine has issued a Memorial Number, many of the articles of which are found also in the *Bulletin of the Johns Hopkins Hospital* for April, 1938. These are illustrated with many photographs of Dr. Billings.

REFERENCE

1. A Great Medical Library, *A.J.P.H.*, Sept., 1936, p. 930.

RAW OR PASTEURIZED MILK?

IN this country everyone who has studied the question even a little is sure of the nutritive value of milk and of its value as a supplementary diet, but even so, strong supporting evidence is welcome.

In England factors led to the formation of a Milk Nutrition Committee.[1] Just before this the Milk-in-Schools Scheme had been set up and afforded an opportunity for a scientific study on its effects on the growth and health of the children participating. It is true that several other such studies had been reported from 1928 to 1930. Research was begun in February, 1935, and ran through the entire school year in each of five areas, covering in all 8,435 children divided into four groups: 2,000 for control, 2,000 on ⅓ pint of pasteurized milk, 2,000 on ⅔ pint of pasteurized milk, and 2,000 on ⅔ pint of raw milk, as a supplementary diet. The study ended in July, 1936. The children were fed a diet to which milk was compared with biscuit, also as a supplementary diet, and were studied as to increase in height and weight after having been assessed clinically as to their general condition. They were also divided as to sex and into three age groups. " Of the 6 comparisons of the average gains in height of these groups over the groups with biscuits, 2 favour raw milk (boys 5–7, girls 11–14), and 4 favour pasteurised (boys 8–10 and 11–14, girls 5–7 and 8–10); of the corresponding comparisons of weight, 4 favour raw milk (boys 5–7 and 8–10, girls 8–10 and 11–14) and 2 favour pasteurised (boys 11–14, girls 5–7).

The only age group in which the two sexes give consistent differences is 8–10 years, in which the increases in height were less on raw than on pasteurised milk and the increases in weight were greater on raw milk."

It is pointed out that in this study the general quantitative response to the milk supplement was not so great as was reported in previous experiments, probably because the amount of milk was smaller and possibly also because of improvement in the average diet of the working class homes during the past 8 years or so. The condition of the study did not allow of any exercise over the control of the home diet consumed by the children or to evaluate it qualitatively or quantitatively.

The general results are in favor of milk as a supplement, even in the smaller amounts. " Comparisons of the growth increments in three different age groups, 5–7 years, 8–10 years, and 11–14 years, show that at each age children with ⅓ pint of milk gained more in weight than those with biscuits, and probably—but rather less consistently—gained more in height."

Most interesting is the fact that examination of the groups clinically assessed as: " (1) good or excellent, (2) satisfactory or normal, (3) poor or bad, leads to the conclusion that, on the whole, children of each clinical grade with milk supplements showed higher rates of growth than children in the corresponding clinical grades with the biscuit supplement."

As we have said, there does not seem to be any room for argument as to the value of good milk in the diet. There are still those who question the comparative value of pasteurized milk as against raw, so that the following conclusion is of especial interest. " Whether comparisons be made of the increments of growth in the total of children or in sub-division by age, area, and clinical assessment, no consistent difference is apparent in these increments between children whose supplement was ⅔ pint of pasteurized milk and the children whose supplement was ⅔ pint of raw milk." An experiment done on such a large scale and under the conditions pertaining in this one should settle the question of the value of raw as compared with pasteurized milk in feeding children, especially as it confirmed the laboratory tests carried out by the same institution.[1]

The whole report is full of interesting questions to those in the field of nutrition generally or to school children and their physical welfare. It must be read and studied to be fully appreciated.

REFERENCE

1. *The Effect of Commercial Pasteurisation on the Nutritive Value of Milk, as Determined by Laboratory Experiment.* National Institute for Research in Dairying, Shinfield, Reading, England, Part I. 1937.

PUBLIC HEALTH EDUCATION*

Never Again Promises the Section—At Kansas City the dinner-business session of the P.H.E. Section resolved that hereafter such sessions should not be open exclusively to fellows.

The question was raised by Dr. W. W. Bauer. In subsequent discussion it was learned that probably all members of the Section Council objected to the limitation. No one knew how it came about. Several past chairmen had rebelled privately.

The significant feature was the failure of anyone to express his objections. No one had taken the initiative toward the correction of an obvious mistake.

One wonders what other unwise things are not done away with, what wise steps are left untaken. And all because members and fellows unanimously keep silent.

Excellent Exhibit Setting—The commodious and pleasing hall did something for the exhibits at the A.P.H.A. meeting in Kansas City in October.

To this writer the technical or commercial exhibits seemed clearly better than in previous years. There were fewer distracting and ill assorted collections of advertising material crowded into the exhibit booths. The exhibits seemed to have been planned more definitely for an intelligent, professional group.

The scientific exhibits depended far less on hard to read statistical tables and other material of a kind which might better have been mimeographed or printed for distribution. Later we hope to offer comments on some of the individual displays.

Better Write Quickly—If you wish copies of anything mentioned in these pages, it is better not to delay in asking for them. Some items will be available for months, even years. Other items will be quickly exhausted.

Why not check back issues of the *Journal* and ask now for whatever is likely to be useful?

The Date Please—Health printed matter from insurance companies, health departments, and other health agencies, *should be dated.*

Careful readers should be able to check whether or not a leaflet or pamphlet is new or old.

The librarian, or the worker in a health agency should not be left in doubt as to which is old and which is new.

The dating is both a convenience and a precaution against obsolete information.

Likewise national and state agencies will serve those who coöperate with them by dating printed or mimeographed lists of publications, motion pictures, etc. We know from recent experience how difficult it is to know when such material is old or recent.

Where Is a Picture of Jenner?—Dr. John Schreiber, Concordia Parish Health Unit, Vidalia, La., has a plan for the publication and distribution of a picture of Jenner. But where to get the picture? Says Dr. Schreiber:

* Please address questions, samples of printed matter, criticism of anything which appears herein, etc., to Evart G. Routzahn, 130 East 22d St., New York, N. Y.

For many years I have thought that every school in the land should have a picture of Edward Jenner, in view of the tremendous saving of lives of children due to vaccination. Surely no one man who ever lived has done as much to save children's lives as Edward Jenner.

Somewhere, some time, I am sure I saw a picture of Jenner vaccinating his young son, as I recall, the doctor in long professional coat with standing collar of the period, the boy stripped to the waist, showing the flesh color of naked skin.

Surely I didn't dream seeing such a picture, so won't you kindly locate it so I can take this up with someone who can further this thought of mine? It keeps bobbing up in my mind every time I am vaccinating or trying to get 100 per cent vaccinations in the schools of my district.

"If Any Money Is Left Over"—In "Four Years of District Health Administration in New York City," by Dr. J. L. Rice and Dr. M. W. Barnard, in *Milbank Memorial Fund Quarterly*, 40 Wall St., New York, N. Y. (July, 1938), under "Health Education":

Of all the district services the one which is probably best suited to localization is health education. Effective teaching of health work must be based on an intimate understanding of the people to be taught. Subject matter must be adapted to many interests, traditional thought patterns and levels of intelligence. Health education seems also to be the field of public health which is least thoroughly geared into public health programs throughout the country. Too often it is the thing to be done if any money is left over. Trained personnel, tested procedures, and funds are inadequate. Four years of district experience have shown both the urgent necessity for organized health education among the people and some of the effective ways in which this can be done on a localized basis. Development of this work is one of the outstanding plans in the district program.

It Can Be Done—Government health education printed matter can be made to look interesting. For proof see a new folder so readable in appearance that you won't believe it came from the U. S. P. H. S. until you see the modest credit line at the foot of the last page.

"Syphilis: It's Cause—It's Spread—Its Cure," is an 8 page folder prepared to supplement efforts of physicians and clinics.

"It is clear. We tried it on patients at a city clinic, on a workers education group, on a grade school age group, on college students. We revised it until it answered their questions in a way they would understand. Then we added the pictures to help drive home the story."

"It is inexpensive. It may be secured from the Superintendent of Documents in Washington, D. C., for $1.00 per 100 copies. In smaller quantities five cents each. But give one to each patient on the occasion of his first visit and it should save many cases for many treatments."

Misinformation Sources—Letters from teachers asking for health education helps from agencies which have never offered this type of service point to the spreading of misinformation. One widely used text for secondary schools lists out of print publications and names two deceased periodicals. Health movies which have been out of print for years are listed. "Cancer Control Society" is given for American Society for the Control of Cancer. (It really is a handier name to use!)

An organization name, and a periodical title are given incorrectly.

A long list of addresses is given with no hint as to the nature of the "Health Education Materials" they supply. The teacher must go fishing through the whole list!

Only the busy, hard-working teacher will take the time and spend the money to write many letters seeking aids in health teaching. One wonders as to the reaction to futile letter writing.

Health educators are urged to do all they can to discourage the publication of carelessly compiled source lists of health education material.

How the House Organ Is Addressed—That is, when mailed *without an enclosing envelope or wrapper.*

Ohio State, North Carolina State, and Canadian National stamp the address at the top of the cover page. Indiana State uses a sticker at top of the cover page.

Michigan State, and Florida State stencil the address at the foot of the last page. New Haven uses a sticker in a 2 inch high space at the foot of the last page.

Georgia State stencils in a 2 inch high space at the top of the last page.

None of the above is enclosed or fastened in any fashion.

Get Them into Courses—We have not done so much in getting groups to attend courses of lectures, single talks, or discussions.

A paid course, at moderate prices, with more or less of reading, study, and consultation as "accessories," would be one step toward securing a much needed nucleus of informed local leaders. For several years in Massachusetts, the university extension courses of the State Department of Education, Boston, Mass., has given a series of lectures in non-technical language called "Keeping Mentally Fit." A fee is charged for auditors; a larger fee for credit students. The nature of the courses and the groups likely to be interested, are carefully described in the announcement folder.

For Prospective Fathers—Reports Maternity Center Association, 1 E. 57th St., New York, N. Y.:

Last year the Maternity Center Association announced a series of classes for prospective fathers to teach them the physiology of pregnancy; how to choose good medical, hospital, and nursing care for their wives; how to help their wives keep fit; how to care for the baby; and how to help to fit the baby into the home without needless confusion.

The association was besieged by men eager to take the course. After they had completed the 5 lessons and several practice periods in bathing, dressing, watering, bubbling, and diapering the demonstration doll, they all agreed that the course had helped them to approach paternity with a feeling of preparedness.

The association has received a number of requests for the outline of the material presented to this group of pioneer students in expectant paternity. This syllabus has been prepared in response to these requests. Suggestions for its improvement will be greatly appreciated.

In response the association offers a "Syllabus: Classes for Prospective Fathers." *15 cents.* This includes the announcement which introduced the idea to newspaper readers. Outlines for 4 lessons are given.

"A Talk for Prospective Fathers" is based on the outline for the first of the 4 lessons. *10 cents.*

The following is the suggested substance of a talk by a physician to men whose wives are about to become mothers. It gives in outline form certain information about childbirth and suggests topics for discussion. The form of the talk may have to be varied according to the size and background of the group. But the aim is to describe briefly the process of generation, including anatomy and physiology, the signs and symptoms of pregnancy, the course of labor, the occurrence of various common disturbances and diseases.

There are many general facts which should be known to the husband so that he may be able to comprehend more effectively his responsibilities in this all-important function. This knowledge should contribute to the happiness and welfare of both partners. In all of this, the necessity for early and adequate medical care is to be stressed and the father urged to participate in providing good care for his wife.

The speaker may modify or add to the material in this outline as seems best in his judgment. Prospective fathers will better understand the process of generation and birth if the descriptions of the organs, fertilization, the course of labor, and other features are illustrated with simple blackboard drawings, or with the aid of models, charts, etc. Simplicity should prevail in presenting the subject; there is no need for elaboration of details, and discussion of treatment should be avoided.

The talk seems to emphasize that the course is a rather stiff one. It would

seem wise for Maternity Center Association to submit more suggestions as to the methods of handling a group of fathers.

A Different Report—Under the quoted headings appeared the paragraphs below, and others.

"Well, What Have Ye Done?"—"'Well, what have ye done in the two years ye have been galavantin' around this country?' Mrs. Smith asked when I told her the Health Department had a birthday," remarked Miss Hassels, the nurse, at the regular staff meeting in July. . . .

"That's a good question, what have we done?" repeated the director, leaning back in his swivel and looking around at his staff. There were Dr. P. R. Lynch, the dentist; E. C. Knight, Sanitary Engineer; Miss Hilda Cabaniss, Osceola County Nurse; Margaret Wilson, Clerk in Reed City office; Miss Anna Hassels, Mecosta County Nurse; and Velma Allen, Big Rapids Clerk. . . .

A Matter of Life and Death—"I noticed that birth registrations are increasing so far this year," remarked Mrs. Allen. "Last year the birth rate dropped considerably. Death certificates coming in from local registrars show a decline, even as compared with the number recorded in 1937, which was lower than in 1936."

"Yes, I noticed that, too," said the director. "In the first 6 months of this year, there were 31 more births than in the same period of 1937 and there were 36 less deaths.

"What does this mean? Figures do not lie. By inspecting them at frequent intervals we can determine whether we have made progress or whether we have merely marked time. The recording of births and deaths makes up the balance sheet of our population. From these records the health officer may draw knowledge to be applied in future public health programs."

Mary Runs Wild—"Here is a letter from a doctor up in Marion who complains that Mary Smith is running wild with untreated gonorrhea. The girl is only 16," Dr. Igloe added.

"We have another case in a 14 year old girl. She is also pregnant," remarked Miss Cabaniss.

"It seems that venereal disease is a disease of youth—and that is what the records really show," remarked the Director, "of 22 cases of gonorrhea recently reported, 17 were under 30 years. Of 9 cases of syphilis reported, 6 were under 30 years of age."

The above are selected from "After Two Years: The Story of the Mecosta-Osceola Health Department—1936–38." The Central Office for the two counties is at Big Rapids, Mich. Although the report does not indicate the state. Director M. C. Igloe, M.D., has a dentist and sanitary inspector, and a clerk and nurse in each county.

"Contents" has two parts. "The Story" in 10 chapters is text; "The Facts" are 10 statistical and factual tables. Mimeographed on letter size paper, heavy cover, spiral binding, yellow paper for the statistics.

Another year it is hoped that chapters 9 and 10 of "The Facts" will be made chapters 1 and 2 where they will not be lost to those not interested in the statistics. These chapters are 3 pages of "Services Rendered," and a page organization diagram.

Don't Unbalance the Diet—An editorial, "Fifty-Fifty," in *Editor and Publisher* (Oct. 22, 1938) discusses a recent prophecy that soon the newspaper will be half text and half pictures.

A picture may be worth 10,000 words, but not every picture is. Few in fact are. A picture, or a series of pictures, can tell some stories completely; they can often complement a word story which needs visualization for completeness. Many stories would be the better for illustration—but a picture alone cannot convey to readers the balanced diet of information necessary for the operation of a democracy. . . .

We have never found an interesting story hard to read because it was set in a gray-black column of type. We don't object to length when length means information—and the popularity of the mastodon novels like *Gone With the Wind* indicates no public aversion to mere length or solid gray pages.

If newspaper words paint pictures, as they should, there'll be no need for making the photographer do all the work. Pictures have their place—one of increasing importance—but it is not at the head of the parade. . . .

Says Dr. Iago Galdston, sender of the clipping:

It is worth noting that we see with the brain and not alone with our eyes. The visual message should therefore be *for* the brain through the eye. Too many stop at the eye level! Again when thought is given to the message for the brain, text is frequently found to be the better vehicle.

Need there be a moral? At least we guard against any method or technic of presentation running away with our health education. And what we have to say to secure the result we are after calls for first consideration. Then we select and balance the forms of presentation.

A Gay Health Play for Adults—Written for a "father-mother-daughter" banquet it includes no fairies, and its solemnity is mockery. Built around the alleged health habits of four leading citizens, in use elsewhere the idea would need adaptation to local people.

It is "The Health Court," by M. C. Pearson. *Womans Press,* 600 Lexington Ave., New York, N. Y., Oct., 1938. *20 cents.* A sample:

The Bailiff places Mrs. Jones before the Judge:

Prisoner Jones is accused of sleeping less than 9 hours per night. Hither and yon she goes, to board meetings, to clubs, to committee meetings, keeping late hours and arising early each morning in spite of it. Sometimes she is known to go to bed on time but to *lie awake and think! (He reads slowly and impressively.)*

Judge (sadly, shaking his head): Lie awake and think! Does the prisoner not know that 9 hours' sleep are absolutely essential if she wants to be president of the board and a member of this and a member of that? Prisoner, what have you to say for yourself?

(The prisoner answers, but no matter what she says, the play goes on as written.)

Judge (turning to the Jury): Gentlemen of the Jury?

Jury (rising): Guilty, Your Honor. (They sit.)

Judge: Prisoner Jones, I sentence you to one week at home without any outside cares or diversions, responsibilities or excitements, committee meetings or conferences. You shall have a 2 hour nap every afternoon and absolutely 9 hours' sleep every night thereafter. Next!

(Prisoner Jones goes back to her seat on the stage as the next prisoner comes up.)

"Preventive" Or Not "Preventive"?—Here is an inquiry which comes from E. Louise Williams, Librarian, State Board of Health, Jackson, Miss.:

I would like to have your opinion with regard to the use of the word "preventive" in connection with the following:

preventive health services
preventive health examinations.

"Preventive" appears to modify the word "health" in these expressions, and in a literal sense seems to be inaccurate. To the laity who read such expressions, there is likelihood of only the first two-thirds of the thought registering, and from a "selling" standpoint the psychology seems poor. I have stumbled across these expressions several times recently and before I consider their adoption, would like to have the benefit of your opinion.

What Would You Have Said?—Will someone tell me what advice and information might well have been sent in reply to the letter quoted below?

Your address has been referred to me as a possible source of aid with publicity. We are about to put on a campaign and I feel this small city that has had our organization for 25 years needs some rather good publicity. They have had the same work for so many years.

MAGAZINE ARTICLES

"Hostess." *American Magazine,* 250 Park Ave., New York, N. Y. Aug., 1938. *25 cents.* One phase of the problem of caring for some of the needs of those who reach hospitals, clinics, etc., as patients or visitors. This is a self-supporting "Hospitality Shop."

"The Fight on 'Polio,'" by Dr. W. R. Ramsey. *Farmer's Wife Magazine,* St. Paul, Minn. Sept., 1938. *10 cents.* Some late developments.

"X Ray marks the spot," by H. Ripperger. *Good Housekeeping,* 57th and 8th Ave., New York, N. Y. Oct.,

1938. *25 cents.* "The case against tb." well stated. Also: "Reduce and Like It," by K. Fisher; "Avoid Pitfalls in the Reducing Game," by Dr. W. H. Eddy. "Treatment of obesity is the province of the physician." As to the menus: "They may be of service to you and your physician."

"Animal Experimentation." Is it essential to the progress of medicine? *Life,* 330 E. 22d St., Chicago, Ill. Oct. 24, 1938. *10 cents.*

"Movie of the Week: The Citadel." *Life.* Nov., 1938.

"A Medical Student Becomes a Doctor: The Life of an Intern," by Dr. Morris Fishbein. 4 picture pages. *Look,* Des Moines, Ia. Oct. 25, 1938. *10 cents.*

"Population Problems," by H. Ward. *New Republic,* 40 E. 49th St., New York, N. Y. Aug. 17, 1938. *15 cents.* "The net impression . . . is that if we can learn to provide adequately for our present . . . people, we will not need to worry about the bogey of excess numbers in the future."

"The Falling Birth-Rate." *Social Welfare,* 37 Bloor St., West, Toronto, 5, Ontario. Sept., 1938. *25 cents.* "The falling birth-rate need not worry us. It is exactly what any sane person would expect."

"By Six-to-One in California," by P. K. Brown, M.D. *Survey Graphic,* 112 E. 19th St., New York, N. Y. Nov., 1938. *30 cents.* State supreme court action on group medicine. Also: "We Can Banish Gonorrhea," by J. B. Clark, M.D. "The battle ahead is going to be a long and hard one."

NEW

Health Education In Kansas, Kansas Tb. and Health Assn., Topeka.

Your Health, Health Dept., Newton, Mass., now printed. An ornamented heading on the first of the 4 pages, a tinted background, different for each issue. Will be mailed to health officers upon request.

Here's Health! weekly mimeographed bulletin of State Board of Health, Dover, Del., comes with a metal staple to be removed before reading—not so good for appearance or for the patience of receiver. Probably in the state at least, it would carry nicely without fastener. Outside of the state use a sticker, or a bit of transparent Scotch tape? Then run in addressing machine so that the fold is at the top. See "How the House Organ Is Addressed" elsewhere in this issue.

Nassau Health, Nassau County Dept. of Health, Mineola, N. Y. Mimeographed, 4 letter-size pages.

Channels, Social Work Publicity Council, 130 E. 22d St., New York, N. Y., is the new printed periodical, successor to the mimeographed *News Bulletin.* It is an effective combination of color, paper, and typography, developed largely through the advisory services of Curtis E. Lakeman. Mr. Lakeman was long known in connection with health agencies—New York State and New York City Health Departments, and the formative years of the American Society for the Control of Cancer—in which he had much to do with health education or its general supervision. In the first issue Mary Swain Routzahn, under "But Not One Cent for Publicity," reviews current criticism of governmental publicity, and raises questions, some of which have a bearing on city and state health department health education, particularly that which calls attention to the activities and services of the departments.

WANTED

Material for a talk to high school groups on "Why a County Health Department" will be welcomed by S. S. Burner, M.D., District Health Unit, Owensville, Mo.

BOOKS AND REPORTS

Public Health and Medical Licensure in the State of Mississippi, 1798–1937—*By Felix J. Underwood, M.D., and R. N. Whitfield, M.D. Jackson, Miss.: State Board of Health,* 1938. 175 pp.

The book deals with the development of public health work in Mississippi from 1799, when the Legislative Assembly of the Territory of Mississippi passed an act "to provide as far as possible against the fatal calamities of contagious diseases," to 1937. The first law requiring a medical license in Mississippi was approved February 12, 1819.

The history of public health in Mississippi may be divided into three periods. The first begins with the formation of the Mississippi Territory in 1798 and extends to the organization of the Mississippi State Board of Health in 1877. During that period a health department for the City of Natchez was established by law in 1818, in which year Mississippi became a state. It provided for sewage disposal; regulation of the sale of damaged or unsafe commodities; a report by the attending physician giving the age of deceased persons and the cause of death; and the appointment of a skillful physician as health officer. Following that, other state laws were enacted referable to the sale of unwholesome food; the establishing of a smallpox vaccine depot in Jackson in 1846; the empowering of towns to pass health regulations; and legislation creating boards of health in Hancock, Harrison, and Jackson Counties.

The second period extends from 1877 to 1910, in which the significant development was the organization of a State Board of Health in 1877. That body was organized in such a way as to become a part of the Mississippi State Medical Association. The same plan of organization exists today except that a dentist has been added.

The third period extends from 1910 to 1937. It began in 1910 with the appointment of Dr. W. S. Leathers as the Director of Public Health for the Mississippi State Board of Health in charge of organization and administration of public health activities. As a result of the stimulation of interest on the part of the public by the workers connected with the hookworm campaign conducted by the State Board of Health in coöperation with the Rockefeller Sanitary Commission, the first full-time county health department was organized in 1915. Other important developments were the organization of a bacteriological laboratory and the office of State Sanitary Inspector which later became the Division of Sanitary Engineering. A Bureau of Vital statistics was established in 1912 with the result that the state was admitted to the U. S. Death Registration Area in 1919 and to the U. S. Birth Registration Area in 1921. Biological products were purchased and distributed to physicians and health officers. Morbidity reporting was instituted in 1913. In 1917 Dr. Leathers was made Executive Officer of the Mississippi State Board of Health and was succeeded in 1924 by Dr. Felix J. Underwood.

Coöperation with other health agencies has been an important factor in the development of the organization. The Rockefeller Sanitary Commission

and the International Health Division of the Rockefeller Foundation, the U. S. Public Health Service, the American Red Cross, the Commonwealth Fund, and the Rosenwald Fund have all aided materially since 1910.

Important research and field investigations relative to yellow fever, pellagra, malaria, typhoid fever, hookworm, and epidemic encephalitis have been conducted which have contributed to our knowledge of these diseases and have aided in their control.

The present organization includes the essential administrative units of a modern health department serving a southern state. It has kept pace with the advances in the field of preventive medicine and has developed its local full-time service to the point where in 1937 there were 33 counties with full-time public health departments serving 50 per cent of the population and covering 40 per cent of the state.

The book contains excerpts from original acts of the Legislature and addresses of members of the medical profession relative to public health matters. Included are charts, maps, and biographical facts relating to those who have been instrumental in the development of public health work in Mississippi since 1877.

ALVIN E. KELLER

The Hospital Head Nurse—*By Mary Marvin Wayland, A.M., R.N. New York: Macmillan,* 1938. 388 pp. Price, $3.50.

Those who are charged with the responsibility for hospital management have a true realization of the all important part played by the head nurse. The author defines the purpose of this book as a desire to help head nurses to a better understanding of their responsibilities to the hospital and to the school of nursing. It meets the great need of those who are particularly concerned with the efficient conduct of the executive aspects of ward nursing and the training of nursing personnel.

Twenty-two chapters and appendices are devoted to pointing out the varied duties and responsibilities of head nurses. Seven of these, in very readable form, are devoted to a presentation of the nurse's responsibility as hostess, nursing expert, practical sanitarian, housekeeper, steward, economist, a junior executive, and as a teacher of both patient and staff. The part she should play in the school of nursing program is also thoroughly defined.

The material is authentic, well outlined, with good summaries, and rich in biographical references.

There is a marked relation between the efficiency of the head nurse and the good care of the patient, and this book can be of invaluable aid in the training for more efficient management, and in the furtherance of nursing education.

CHARLES F. WILINSKI

Science in Our Lives—*By Benjamin C. Gruenberg and Samuel P. Unzicker. Yonkers, N. Y.: World Book Co.,* 1938. 750 pp. Price, $1.76.

During the last twenty years, there has been a great deal of discussion in secondary school circles as to the need of organization of courses in "general science." The implication is that it is possible to give high school students a single course that will develop for them a concept of the most important phases in such sciences as chemistry, physics, biology, and hygiene. This is in direct contrast to the older procedure of giving separate courses in physics and in chemistry, and, in later years, in biology. The high schools in a considerable number of communities now offer such a combined course.

This text is an effort to provide reading material, problems, and activities which shall "offer opportunity for practical training in scientific thinking in everyday situations." These activi-

ties include experiments, demonstrations, and investigation. An effort is made to appeal to the varying interests of the young people concerned.

The text is divided into two parts: Part I including four units on air, water, fire, and earth; and Part II having four units, the first of which "Controlling the World" deals with work, machines and tools, power and motors, the second dealing with electricity, the third with the living machine, and factors like foods, environment, reproduction, heredity, and mental attitudes which affect the conditions of that machine, and fourth a discussion of the special senses.

Each chapter has at its end a summary of the chapter, a group of questions on the material covered by the chapter, and a group of problems for the class to work on in an effort to bring concentrated thought upon the more important factors discussed.

CHARLES H. KEENE

Posture and Exercise for Young Children—*By Dr. John Gibbens. London: National Association of Maternity and Child Welfare Centers and for the Prevention of Infant Mortality (Carnegie House, 117 Piccadilly, W. 1)*, 1938. 23 pp. Price, $.50.

This helpful and attractive pamphlet presents a clear picture of what may be accomplished in developing good posture in young children. Following a general description of what good posture means and its effects upon health, there is given a series of exercises as a part of play designed to bring all the skeletal muscles into activity. These exercises are illustrated with charming silhouettes of young children in action. The author warns that "formal exercises and fixed gymnastics are bad for young children, for they do away with wit and humour and imagination, without which the world would be a poor place." The pamphlet is well written and should prove helpful to those engaged in infant and preschool work.

RICHARD A. BOLT

Health, Hygiene and Hooey—*By W. W. Bauer, M.D. New York: Bobbs-Merrill*, 1938. 322 pp. Price, $2.50.

This book, written for the layman, is different. The author calls attention to the fact that so much interest has been aroused in health that there is a vast amount of both information and misinformation (entirely too much of the latter) peddled by all sorts and kinds of people. It is important to be able to distinguish between authentic sources and those that are not, therefore, instead of naming names, as he expresses it, he devotes his efforts to general principles. He says, "The best safeguard against exploitation is a knowledge of principles. Individual exploiters come and go; nostrums rise, flourish, and vanish; quackery is different every day and yet, fundamentally, the same. A person who understands the characteristics of charlatanism will not be fooled by the individual exploiter." The general argument is summed up in his last chapter, "Common Sense, Preferred," and his last words warn the health seeker that his best security will be found in "Common Sense, Preferred, and Skepticism, Unlimited."

The author has a gift for striking titles, such as "Swivel-Chair Hygiene," "Dispelling Dietary Dilemmas," "A Fake for Every Ache," "Soft Soap and Skin Games," etc. We particularly recommend Chapter XIV "Who Pays the Piper." In addition to formulating striking titles, he also has a humorously impressive way of putting facts. For example, in speaking of mascara, he says, "Making up the eyelashes is a safe procedure if only mascara is employed. This formerly put the lady at

a disadvantage, because tears played havoc with it. Now all that is changed with the advent of waterproof mascara, which allows a lady to weep and still be lovely." The ordinary materials of everyday make-up are called "war paint." ". . . hope springs eternal in the baldest heads, and the shining pink cranium is always good for a rub of something or other which raises hope if not hair."

There is a long appendix called "They're Telling You!!" in which are given the principal governmental sources from which one may get correct information on health, also the voluntary societies, beginning, of course with the A.P.H.A.—"the basic fundamental organization of technical workers in public health, including doctors, nurses, laboratory and research technicians, engineers, sanitary officers, statisticians, and health educators." The author does not believe that a book list should be given in a work of this kind since books come and go and such lists should be kept up-to-date to be of real value. However, he gives 22 books now on the market which may be consulted, and 5 health magazines.

The book is interestingly written and will hold the attention of readers. It goes well with "The Traffic in Health" and "Poisons, Potions, Profits." It is accurate and can be recommended without any reservation. We wish for it a wide circulation.

MAZŸCK P. RAVENEL

In the Name of Common Sense: Worry and Its Control—*By Matthew N. Chappell. New York: Macmillan,* 1938. 192 pp. Price, $1.75.

This book was written "for and about normal people—people who can lay the foundations of their own emotional discomforts, nurture them to inconvenient intensity, and learn with ease to control them." The author believes that worry, which is so prevalent an activity in this era of great insecurity, is an expensive luxury which no individual can afford, and the book is offered as a guide for the intelligent layman who has inadvertently become an accomplished worrier and who wishes to eliminate this drain on his energies.

Worry, or the undue preoccupation with painful thoughts, is regarded as a psychological habit which has been learned and gradually developed through persistent practice. The really proficient worrier, as a result of his emotionally charged thinking, gradually acquires a whole series of alarming symptoms, which may include anxiety and fear, fatigue, indigestion, decrease in sexual interest, constipation, insomnia, a variety of pains and aches, excessive irritability, and marital unhappiness. A chapter on each of these subjects is offered "to supply 'insight,' to explain the acquisition of discomforts; their real significance, if any; and how they may be controlled."

The book is based on extensive experience, much of which has been in collaboration with physicians, in the successful adjustment of patients through psychological re-training. It is written in a vigorous and humorous style, which will hold the reader's interest, and for the group to which it is addressed, it should be of great aid in understanding and overcoming their difficulties. CLARA BASSETT

Industrial Hygiene—A Handbook of Hygiene and Toxicology for Engineers and Plant Managers—*By Laurence B. Chenoweth, M.D., and Willard Machle, M.D., with Foreword by Herman Schneider, Sc.D., LL.D. New York: F. S. Crofts & Co.,* 1938. 235 pp. Price, $2.00.

This is essentially a brief general coverage, by a community and school hygienist and an industrial toxicologist, both of Cincinnati. The first 7 chapters (by Dr. Chenoweth) comprise a

historical introduction (7 pp.); workmen's compensation (7 pp.); industrial accidents (14 pp.); fatigue (6 pp.); physical factors in industrial hygiene (11 pp.); health service in industry (10 pp.)—with somewhat disproportionate space given to *locomotor ataxia;* and first-aid treatment of injuries (27 pp. plus appendix of 20 pp.)—well rendered, with many illustrations. Rather too much space is given to snake bite and far too little to tuberculosis for industrial hygiene purposes.

The succeeding 8 chapters (119 pp.) by Dr. Machle are chiefly a laboratory approach—brief, well rendered, and fairly comprehensive—on occupational intoxication; chemical burns; oxygen deficiency and asphyxia; dust diseases; respirators, etc.; occupational affections of the skin; industrial neuroses and malingering; and miscellaneous occupational affections. The author shows an original and interesting approach to the poison question. Some of the definitions within which he confines himself seem too restricted to the reviewer.

Dangerous trades and callings are, in general, omitted. The great majority of the 104 illustrations pertain to first-aid procedures. An adequate Index accompanies and the book is well printed and bound.

No bibliography is included, but a few references are made. Necessarily many omissions occur in a limited volume devoted to such a broad subject.

There are several comparable and more extensive works in this same field with which the engineer and plant manager should also stock his library.

EMERY R. HAYHURST

A Historical Chronology of Tuberculosis—*By Richard M. Burke, M.D. Springfield, Ill.: Thomas,* 1938. 84 pp. Price, $1.50.

This book is divided into four periods, the Ancient (5000 B.C.–1600 A.D.), the Pre-Modern (1600–1800), the Modern, Part One (1800–1881), and the Modern, Part Two (1882–19—). The chronology is useful and as far as the reviewer has been able to check it, correct. One is surprised to find such things mentioned as the invention of gunpowder in 1330, the voyage of Magellan in 1519, the invention of the power loom in 1785, etc., and one finds it hard to see what these have to do with the history of tuberculosis. The author explains that he has included certain happenings which formed a part of the background upon which the pattern of tuberculosis has unfolded, but in spite of this explanation, we cannot see that these events are pertinent to the subject. Certain medical events, like the Black Death in 1348, and the discovery of insulin in 1921, also appear to have no bearing on tuberculosis.

We wish that the author had been a little more exact concerning the London Congress on Tuberculosis in 1901, in which Koch claimed that bovine tuberculosis was not important as a danger to man. He was combated at once at the same Congress with facts which were amplified in 1902, when experiments under way in 1901 were complete.

Altogether, the book is a useful and interesting one. It ends with a chart giving a graphic outline of the development of our knowledge of tuberculosis. The printing and make-up are excellent, and the book can be recommended to all interested in this disease. There is a very good index both of names and subjects.

MAZŸCK P. RAVENEL

An Introduction to Medical Statistics—*By Hilda M. Woods and William T. Russell. London: P. S. King & Son, Ltd.,* 1936. 125 pp. Price, $2.75.

This book was written to meet the needs of young medical students in the

London School of Hygiene and Tropical Medicine. Although small enough to be placed within the pocket, it touches upon the essentials of vital statistics. What is meant by statistical analysis is well expressed and in few words.

Chapter headings include Vital Statistics, Tabulation of Data, Construction of Charts and Graphs, Population, Standardised Death-Rate, Averages, Measures of Dispersion, Correlation, Coefficient of Regression, Life Tables and Sampling.

Pit-falls into which the student often falls are illustrated. Numerous tables and graphs add to the value of the book.

Statistics is a confusing subject to most medical students. They have difficulty in clarifying within their minds the meaning of statistical constants, such as averages, measures of dispersion, correlation, etc. It is to be regretted, therefore, that this book unnecessarily adds to the confusion when it makes general use of an arbitrary origin in its illustrative computations.

The book can be read from cover to cover in a few hours and the subject of medical statistics will be found far from dull. J. N. BAKER

BOOKS RECEIVED

THE HISTORY OF BACTERIOLOGY. By William Bulloch. New York: Oxford, 1938. 422 pp. Price, $3.75.

FOODS. PRODUCTION, MARKETING, CONSUMPTION. By Jean J. Stewart. New York: Prentice-Hall, 1938. 737 pp. Price, $3.25.

A GUIDE TO HUMAN PARASITOLOGY FOR MEDICAL PRACTITIONERS. By D. B. Blacklock and T. Southwell. Baltimore: Wood, 1938. 259 pp. Price, $4.00.

MANUAL OF VETERINARY BACTERIOLOGY. By Raymond A. Kelser. 3d ed. Baltimore: Williams & Wilkins, 1938. 640 pp. Price, $6.00.

SANITATION OF THE DRINKING GLASS. Part One, Method and Procedures, By Jack G. Baker. Part Two, Practical Control, By Raymond V. Stone. Los Angeles: National Association of Sanitarians, 1938. 60 pp. Price, $.25.

HEALTH INSURANCE WITH MEDICAL CARE. The British Experience. By Douglass W. Orr and Jean Walker Orr. New York: Macmillan, 1938. 271 pp. Price, $2.50.

SLEEP! THE SECRET OF GREATER POWER AND ACHIEVEMENT. By Ray Giles. Indianapolis: Bobbs-Merrill, 1938. 290 pp. Price, $1.75.

EDUCATIONAL BROADCASTING, 1937. Edited by C. S. Marsh. Chicago: University of Chicago Press, 1938. 387 pp. Price, $3.00.

TEACHABLE MOMENTS. A New Approach to Health. By Jay B. Nash. New York: Barnes, 1938. 243 pp. Price, $1.50.

OUR COMMON AILMENT. CONSTIPATION: ITS CAUSE AND CURE. By Harold Aaron. New York: Dodge, 1938. 192 pp. Price, $1.50.

CARBON MONOXIDE ASPHYXIA. By Cecil K. Drinker. New York: Oxford, 1938. 276 pp. Price, $4.50.

BIOLOGY AND PATHOLOGY OF THE TOOTH AND ITS SUPPORTING MECHANISM. By Bernhard Gottlieb, Balint Orban and Moses Diamond. New York: Macmillan, 1938. 195 pp. Price, $5.00.

THE HEALTH PROGRAM IN SMALL ASSOCIATIONS. By Edith M. Gates. New York: Womans Press, 1936. 57 pp. Price, $.65.

BIBLIOGRAPHY AND ABSTRACTS ON THE CHLORAMINE TREATMENT OF WATER. Collected and Prepared by Project 465-97-3-35 Research in Selected Problems in Sewage Treatment. New York: Department of Sanitation, 1937. 225 pp.

BOSTON COLLEGE SCHOOL OF SOCIAL WORK STUDIES. The Professional Secret in Social Work. By Walter McGuinn, S.J. Boston: Boston College School of Social Work, 1938. 34 pp.

MATERNITY CARE IN A RURAL COMMUNITY. Pike County, Miss., 1931–1936. By Maxwell E. Lapham. New York: Commonwealth Fund, 1938. 65 pp. Price, $.25.

SPRING FLOODS AND TORNADOES, 1936. Official Report of Relief Operations. Washington: American National Red Cross, 1938. 173 pp.

ESTUARY OF THE RIVER MERSEY. Effect of the Discharge of Sewage on the Conservancy of the River. Department of Scientific and Industrial Research. (Water Pollution Research Technical Paper No. 7.) London: His Majesty's Stationery Office, 1938. 337 pp. Price, $8.00.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

On Sundry Matters—The further preventive medicine is kept from curative, the better the jobs will be done. The time for clinics detached from hospitals is past; clinics in health centers should be discouraged. Rheumatic fever stands next to tuberculosis, pneumonia, and syphilis among the communicable diseases and is the forgotten health problem. Domiciliary medical and nursing care must be developed under non-political auspices. These are random gleanings from a long and provocative paper.

CORWIN, E. H. L. Reorientation in the Public Health and Hospital Organization Patterns of Our Communal Life. New York State J. Med. 38, 20:1320 (Oct. 15), 1938.

Standards of Driving Fitness—In last month's Annotated Bibliography, we learned that with not more than 0.5 parts per 1,000 of alcohol in the blood, one could drive with no more chance of accident than if he had not had a drink. Now we are told that 2 oz. of whiskey or 1 to 1½ qts. of beer, taken on an empty stomach, will give a blood alcohol concentration not in excess of that amount. After a meal double quantities may be taken within the same limits of effect.

HAGGARD, H. W., *et al.* Quantitative Differences in the Effect of Alcoholic Beverages. New Eng. J. Med. 219, 13:466 (Sept. 29), 1938.

Rheumatic Fever Signs—"Growing pains" are not related to rheumatic fever and do not provoke rheumatic carditis. They are usually associated with colds, slight orthopedic deformity, and other conditions that can be discovered and treated by ordinary methods. If this British doctor's views hold water on this side of the Atlantic, some health educators hereabouts had better look to their teaching material.

HAWKSLEY, J. C. The Incidence and Significance of "Growing Pains" in Children and Adolescents. J. Roy. San. Inst. 1, 13:798 (Oct.), 1938.

Ten Years' Improvement in Tuberculosis Incidence—Percentages of certain Philadelphia high school students reacting to tuberculin declined from 80 in 1927 to 64 in 1937. In girls the decline was greater than in boys. There was no decline in incidence of infection among Negro students. Also, the incidence among Philadelphia high school students remains considerably higher than in many other cities.

HETHERINGTON, H. W., *et al.* The Incidence and Control of Tuberculosis in High School Children. Am. Rev. Tuberc. 38, 4:406 (Oct.), 1938.

Good News (Sanitary)—In 1930, for the first time in United States history, the population living in communities having sewage treatment caught up with the increase in urban population. Since then, the sewage of 6 million additional people has been disposed of by some method better than dilution. During this time the improvement has been qualitative as well as quantitative, for there has been a distinct advance in every phase of the sewage treatment art.

HYDE, C. G. A Decade of Sewage Treatment: 1928–1938. Munic. San. 9, 10:480 (Oct.), 1938.

Urban Birth Rates — Country people who move to the city before

marriage have no more children than city folks. This is true of colored and white people.

KISER, C. V. Birth Rates Among Rural Migrants in Cities. Milbank Quart. 16, 4:369 (Oct.), 1938.

Children's Carious Teeth—Although girls have more caries than boys of the same age, their teeth erupt earlier and hence have a longer time to decay. Allowing for this factor, it appears that girls are no more susceptible to dental caries than are boys. The moral is that conclusion jumping is a hazardous indoor sport.

KLEIN, H., and PALMER, C. E. Studies on Dental Caries. Pub. Health Rep. 53, 38: 1685 (Sept. 23), 1938.

Outlook for Education in Preventive Medicine—Recounting the growth of facilities for teaching preventive medicine to medical students, the author points to the recently created need for more trained medical health officers than the educational institutions can supply with their still limited training facilities in this field.

LEATHERS, W. S. Preventive Medicine. J.A.M.A. 111, 17:1517 (Oct. 22), 1938.

Nutrition and Child Development—Among a group of institutional children, a third were kept on the usual diet, a third were given a pint equivalent of evaporated milk in addition, and the remaining third the same amount of irradiated evaporated milk. As would be expected, the control children on a mediocre diet did not progress as well as those receiving supplementary milk, but those on irradiated milk did no better than those on plain.

MACNAIR, V., and ROBERTS, L. J. Effect of Milk Supplement on the Physical Status of Institutional Children. Am. J. Dis. Child. 56, 3:494 (Sept.), 1938.

Air Comfort—Dry-bulb thermometer readings are no index of comfort. Other instruments and indexes that may be used in determining "effective temperature" are described in this excellent article which has so much significance in these days of super-air-conditioning.

MCCORD, C. P., and WITHERIDGE, W. V. Measurement of Air Conditions. J.A.M.A. 111, 18:1647 (Oct. 29), 1938.

Making the Sanatorium Prevent—The evolution of the modern tuberculosis sanatorium and its broadening functions in the control program are excellently presented in this paper which is of especial value to health administrators who should be concerned with the preventive features of the recently recreated nation-wide interest in that disease.

POPE, A. S. The Rôle of the Sanatorium in Tuberculosis Control. Milbank Quart. 16, 4:327 (Oct.), 1938.

Eminently Logical—New York City's tuberculosis control program is largely given over to case finding and most of the available services are devoted to the groups where the most good can be accomplished; that is, adults in susceptible racial and economic groups. The rapid roll paper method has proved convenient, inexpensive, and satisfactory.

ROBINS, A. B. Mass Case-Finding. Am. Rev. Tuberc. 38, 4:448 (Oct.), 1938.

Clinical Lecture—Proof that good prenatal care pays.

SCHWARTZ, O. H. Antepartum Care. J.A.M.A. 111, 16:1460 (Oct. 15), 1938.

Super-Eating—Once accepted as fundamental, that one cannot advantageously consume more food than one obviously needs, the statement is found to be over-simplified in the light of recent research in nutrition. What must be taught now is scientific discrimination in diet.

SHERMAN, H. C. Relation of Nutrition to Optimal Health. J. Health & Phys. Ed. 9, 7:406 (Sept.), 1938.

In Praise of Breast Feeding—It is safe to assume, this British writer assumes, that 20 to 30 per cent of babies are artificially fed from birth, and that not more than a third are fully breast fed through the first 6 months. Mortality and morbidity rates are higher among artificially fed infants. Lactation is good for the mothers, too. How mothers can be induced to nurse their babies is considered at length.

SPENCE, J. C. The Modern Decline of Breast Feeding. Brit. M. J. (Oct. 8), 1938, p. 4057.

British Views on Epidemiology—Droplets do not go around corners with any facility, if at all. That is why the cubicle system works in infectious wards. Scarlet fever nursed in cubicle wards showed no changes in serologic types, but in multiple bed wards a majority of patients became reinfected with other types often to their disadvantage. Many other avenues for the spread both of respiratory and intestinal infections in these two interesting papers.

STALLYBRASS, C. O., and SMITH, H. G. Changing Views as to the Spread of Infection. J. Roy. San. Inst. 1, 13:769 (Oct.), 1938.

Housing Accommodations and Child Bearing—Pointing out the need for quantitative as well as qualitative considerations in housing, the author concludes that private enterprise can hardly be induced to provide housing units suited to a sound population of optimum size.

THOMPSON, W. S. The Effect of Housing Upon Population Growth. Milbank Quart. 16, 4:359 (Oct.), 1938.

ASSOCIATION NEWS

Resolutions Passed at Kansas City

CERTAIN of the Resolutions passed at the 67th Annual Meeting in Kansas City are of such timely importance that they are printed below. Other Resolutions will appear in the Association *Year Book*.

It is particularly important that the official text of these Resolutions be read by all persons who are interested in just what the American Public Health Association has approved, especially in view of confused reports in the public press.

THE NATIONAL HEALTH PROGRAM

THE American Public Health Association, ever increasingly conscious of the leadership and competence which have characterized the work of the various federal health agencies, records its unanimous satisfaction in the further evidence of the effective interest of the federal government in the health of the nation, embodied in the recommendations of its Interdepartmental Committee to Coordinate Health and Welfare Activities to the National Health Conference, July 18–20, 1938.

There can be no doubt that large areas of many of our states do not enjoy the benefits of adequate health service. We maintain that without adequate local health organization covering every area of the United States, the delivery of the full benefits of modern public health procedure to all the people in the United States cannot be accomplished. We recognize further the indispensable services which state departments of health are capable of contributing over and above those provided under local governmental units in urban or rural communities.

In recognition of these facts, we endorse the recommendations presented before the National Health Conference by the Technical Committee on Medical Care, which propose the expansion of public health services, including necessary medical, hospital, and nursing care for the period of maternity and childhood in families unable to obtain adequate care through their own resources.

An appraisal of national health resources reveals the existence of many communities in which hospital facilities are meager or lacking. The inadequacy of institutional facilities presents a handicap to the control of tuberculosis and mental disease, and deprives those requiring care in general hospitals of the full benefits of modern medical treatment. In certain communities adequately supplied with hospitals, economic barriers prevent their full utilization. For large numbers of our population, inadequate income results in inadequate medical and dental care. The concept of the close interrelation of preventive and curative medicine is basic to the modern public health program.

We therefore endorse the recommendations of the Technical Committee to the National Health Conference providing for federal aid to the states for the construction of additional hospital facilities, the provision of essential medical and nursing care, and hospital care as required, to persons unable to support such care from their own resources, and the compensation against wage loss incurred through sickness. In connection with the Technical Committee's recommendation concerning medical care, the Association supports the view that in the initiation and development of the program, wide latitude should be given to the states in the definition of the population to be served and the method of providing medical service.

We pledge the American Public Health Association to use all its professional resources, and such influence as it has earned through sixty-eight years of development and leadership in public health to aid governmental agencies in accomplishing those statesmanlike health objectives.

Furthermore, we offer our coöperation to the governmental agencies which may be charged with the proposed expansion of health services in the United States, and we stand ready to collaborate with other professional and scientific organizations having similar principles and objectives, to the end

that at the earliest possible date in every area under the jurisdiction of the United States the whole population may have the benefit of the best that public health service can bring them.

BE IT RESOLVED that the foregoing declaration expresses the formal and considered opinion of the American Public Health Association and that it shall be published in the *Journal*.

BE IT FURTHER RESOLVED that the Executive Board is hereby instructed to appoint a representative committee of seven Fellows of the Association to coöperate during the coming year with the Interdepartmental Committee of the United States Government, with the American Medical Association, the American Dental Association, the National Organization for Public Health Nursing, the Conference of State and Territorial Health Officers and with other agencies, to the end that these principles may be translated into effective action.

APPRECIATION OF PARTICIPATION BY DR. IRVIN ABELL

THE American Public Health Association records its appreciation of the participation in its deliberations during this Annual Meeting week of Dr. Irvin Abell, President of the American Medical Association. It records with pleasure its agreement with the approval in principle, at a recent special session of the House of Delegates of the American Medical Association, of the content of the national health program presented by the Interdepartmental Committee to the National Health Conference. The Association pledges its continued coöperation and support to the American Medical Association in the translation of this policy into action.

EFFECTIVE CONTROL OF DRUGS

WHEREAS, it appears that the health and welfare of the American public are being jeopardized in a large way by an enormous volume of drug preparations advertised and sold through consumer channels for self-medication; and,

WHEREAS, the federal government through the passage of the Wheeler-Lea Amendment and the Copeland Act at the last session of the National Congress, is now equipped to deal adequately from a federal standpoint with abuses involving harmful and dangerous drugs as well as false and misleading advertising of every description in regard to food, drugs and cosmetic preparations offered for sale in interstate traffic, be it, therefore,

RESOLVED that the American Public Health Association, through its constituent membership and allied health organizations exert every possible effort to coöperate with the federal government in the realization of these most laudable objectives; and to this end, be it further

RESOLVED that the American Public Health Association recommend to those state health departments having jurisdiction over food and drug control, that steps be taken as expeditiously as possible to revise the existing state laws, if necessary, so as to harmonize with the federal regulations in order that complete coördination and mutual coöperation may be effected, and all unnecessary duplication be eliminated.

BASIC REQUIREMENTS FOR MEDICAL PRACTICE AND THE USE OF ANIMALS IN SCIENTIFIC RESEARCH

WHEREAS, despite the fact that one of the proudest chapters in the history of American Medicine is the improvement in training and professional qualifications of American physicians, there is still occasional evidence of lack of understanding by some groups of the general public of these accomplishments. From time to time in the various states and sections of this country there appear legislative proposals inimical to the continued progress of scientific medicine and public health. Many of these proposals if passed would seriously injure the health of the public and prove serious obstacles to biological research and curative and preventive medicine.

RESOLVED that the American Public Health Association hereby records its firm conviction that those who would practise the healing arts and sciences must be thoroughly trained in the basic sciences such as anatomy, chemistry, physics, physiology, bacteriology, and the like, as well as in the clinical subjects such as medicine, preventive medicine, surgery, pediatrics, obstetrics, and the like, and that such training requires a minimum of high school graduation, two years of academic college study, four years in a recognized Class A medical school, and one year of internship in an approved hospital or laboratory

That minimum standards of training now upheld by Class A medical schools in the United States are reasonable and proper, and that none should administer to the sick in the capacity of physician without having met these requirements or their full equivalent and without being licensed to practise medicine by a state medical examining board.

BE IT FURTHER RESOLVED that the American Public Health Association considers laboratory work with animals essential to re-

search into the still unknown areas in biology, medicine, preventive medicine, surgery, therapeutics, and public health. That even as we are dependent for our food supply on the lower animals, so likewise are we dependent upon the so-called laboratory animals for sera, vaccines, and other medicines which result in enormous savings of both human and animal life;

That restriction of the supply of such animals to any responsible institution or organization engaged in medical training, scientific research or manufacture of therapeutic agents would be a serious menace to the public health.

NEW AFFILIATED SOCIETIES

AT the Annual Meeting of the A.P.H.A. in Kansas City, three state public health associations were approved as Affiliated Societies of the American Public Health Association, making a total of nineteen. Names of these new societies and their officers are:

Arizona Public Health Association
President—George F. Manning, M.D., Flagstaff
President-Elect—W. W. Peter, M.D., Window Rock
First Vice-President—Noel McKeehan, Phoenix
Second Vice-President—Beth Woolfolk, Phoenix
Secretary-Treasurer—Marion E. Stroud, Phoenix

Colorado Public Health Association
President—A. L. Beaghler, M.D., Denver
Vice-President—Roy L. Cleere, M.D., Denver
Treasurer—Omer Gillett, M.D., Colorado Springs
Acting Secretary—Marie P. Fackt, M.D., Denver

Utah Public Health Association
President—L. L. Daines, M.D., Salt Lake City
President-Elect—S. G. Paul, M.D., Salt Lake City
Treasurer—D. C. Houston, Salt Lake City
Secretary—S. E. Gilchrist, Salt Lake City

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

Leonides A. Almazan, M.D., Paseo Reforma 10, Mexico City, Mexico, Chief, Public Health Dept. of Mexico

Henry H. Asher, M.D., Ozark, Mo., District State Health Officer

Huston J. Banton, M.D., M.P.H., Fort Riley, Kans., Director of Laboratory and Assistant Inspector

J. Nelson Barger, M.D., Albany, Mo., County Health Officer

Edgar A. Belden, M.D., 811 Virginia Ave., Columbia, Mo., District State Health Officer

Arnold S. Benson, M.D., 30 Island Ave., Aurora, Ill., Health Commissioner

Claude M. Eberhart, M.D., 1009 Broadway, Highland, Ill., District Health Supt., State Dept. of Public Health

Charles F. Engelking, M.D., C.P.H., 76 S. Thornton Ave., Dalton, Ga., Whitfield County Commissioner of Health

Floyd B. Gillespie, M.D., Fairbanks, Alaska, Deputy Commissioner of Health

Phares Y. Greene, M.D., Graham, N. C., Alamance County Health Officer

Beatrice T. Hagen, M.D., Court House, Zanesville, O., Muskingum County Health Commissioner

Fred P. Helm, M.D., State Board of Health, Topeka, Kans., Secretary and Executive Officer

Forrest A. Kelley, M.D., 103½ E. 9th, Winfield, Kans., Cowley County Health Officer

Ralph R. Kelley, M.D., Savannah, Mo., County and State Deputy Health Officer

Lawrence J. Linck, 414 S. Boulevard, Evanston, Ill., Director, Chicago Syphilis Control Project and Special Consultant, Division of Venereal Diseases, U. S. Public Health Service

Hugh B. Martin, Municipal Bldg., Englewood, N. J., Health Officer

Grady F. Mathews, M.D., Tahlequah, Okla., District State Health Officer.

Herbert L. Newcombe, M.D., M.P.H., South Central District Health Unit, Twin Falls, Idaho, Assistant Director

L. A. Proctor, M.D., 112½ S. 18th, Parsons, Kans., Health Officer

Albert J. Randall, M.D., 723-56 St., Kenosha, Wis., Director of Public Health

Howard G. Romig, M.D., Anchorage, Alaska, Assistant Health Commissioner

Dr. Severi Savonen, Yrjonkatu, Helsinki, Finland, Secretary, Finnish National Anti-Tuberculosis Assn.

Richard Sears, M.D., White Cloud, Mich., Director, District Health Unit 5

Joseph W. Spearing, M.D., P. O. Box 403, Cimarron, Kans., County Health Officer

George C. Stucky, M.D., Eaton County Health Dept., Charlotte, Mich., Director

J. V. Van Cleve, M.D., 906 Brown Bldg., Wichita, Kans., Director of Syphilis Clinic, Sedgwick County Clinic and Hospital

Theodore L. Waddle, M.D., Dexter, Mo., District State Health Officer

Roy A. Walton, M.D., D.P.H., 41 Ave. and Fraser St., Vancouver, B. C., Canada, Director, Metropolitan Health Unit 4

Anderson F. Whitsitt, M.D., C.P.H., Chestertown, Md., Deputy State Health Officer and Kent County Health Officer

Laboratory Section

Flora H. Acton, 1305 W. 16 St., Topeka, Kans., Bacteriologist, State Public Health Laboratory

L. H. Allwardt, D.Sc., 121 W. Main St., Chillicothe, O., Bacteriologist, Dept. of Health

Jean Christopher, Public Health Laboratory, Topeka, Kans., Bacteriologist

R. J. Gibbons, M.D., Laboratory of Hygiene, John & Sussex Sts., Ottawa, Ont., Canada, Senior Bacteriologist

Alfred G. Karlson, D.V.M., 914 W. Center, Rochester, Minn., Fellow, Mayo Foundation for Medical Education and Research

Frederick C. Mortensen, Ph.D., Station Hospital, Fort Leavenworth, Kans., Captain, Sanitary Corps, U. S. Army

Murrell O. Robinson, V.M.D., Box 263, Auburn, Ala., Professor of Bacteriology, Alabama Polytechnic Institute

Robert M. Shaw, M.D., D.P.H., Provincial Laboratory, Univ. of Alberta, Edmonton, Alta., Canada, Professor of Bacteriology and Hygiene

Henry C. Sweany, M.D., 5601 N. Pulaski Rd., Chicago, Ill., Medical Director, Research and Laboratories, Chicago Municipal Tuberculosis Sanitarium

Harriette D. Vera, Ph.D., Dept. of Physiology, Goucher College, Baltimore, Md., Instructor in Bacteriology

Vital Statistics Section

Wayne F. Caskey, Ph.D., 2312 S. Nash St., Arlington, Va., Head, Admr. Studies Unit, Bureau of Old-Age Insurance, Social Security Board

Frances Idol, 1100 W. Main St., Jefferson City, Mo., Assistant State Registrar

Francis E. Kester, State Board of Health, Madison, Wis., Acting Director of Vital Statistics

Margaret D. Lang, State Dept. of Health, Bismarck, N. D., Director, Division of Vital Statistics

Gordon N. Perry, Bureau of Economics and Statistics, Parliament Bldgs., Victoria, B. C., Canada, Director

Public Health Engineering Section

Buford D. Baker, 2619 Indiana, Topeka, Kans., County Sanitarian

Lewis Dodson, 2410 Seton, Austin, Tex., Itinarat Instructor of Sewage and Sanitation, State Dept. of Education

Glen A. Harwell, Osceola, Mo., Public Health Engineer, State Board of Health

John A. Logan, 1613 E. Broadway, Columbia, Mo., Instructor in Sanitary Engineering, University of Missouri

Richard M. McLaughlin, 17 Merritt Ave., White Plains, N. Y., Acting Director, Division of Sanitation, Westchester County Dept. of Health

George D. Newton, Fulton County Health Dept., Atlanta, Ga., Sanitary Engineer

M. W. Pirkle, City Hall, Marietta, Ga., Acting Division Engineer, State Dept. of Public Health

M. Dwight Sanders, Swift & Co., Union Stock Yards, Chicago, Ill., Research and Development in Industrial Waste Treatment

Ivan F. Shull, 300 S. Broadway, Wichita, Kans., County Sanitarian

James H. Stephens, State Board of Health, Columbia, S. C., Sanitary Engineer, Field Training Unit

J. Harold Tillman, 2730 Wheeling St., El Paso, Tex., Sanitarian, City-County Health Dept.

Ben L. Williamson, Rm. 15, Marvin Hall, Univ. of Kansas, Lawrence, Kans., Asst. Engineer, Division of Sanitation, State Board of Health

Industrial Hygiene Section

Frederick H. Goldman, Ph.D., National Institute of Health, Washington, D. C., Chemist, Division of Industrial Hygiene, U. S. Public Health Service

Richard D. Mudd, M.D., Ph.D., Chevrolet-Grey Iron Foundry, Saginaw, Mich., Medical Director

Food and Nutrition Section

Raoul F. Cowley, Ave. de Belgica 7, Alturas de Almendares, Marianao, Cuba, Technical Adviser, National Technical Milk Commission of Cuba

John T. R. Nickerson, Ph.D., 3 Commercial St., Boston, Mass., Research Chemist, Birdseye Laboratories

Charles Pecher, M.D., 532 Avenue Louise, Brussels, Belgium, Interne, Brugmann Hospital

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Alice H. Smith, 1900 Euclid Ave., Cleveland, O., Nutritionist, Cleveland Health Council

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R. Norris Miller, M.D., Ph.D., College of Emporia, Emporia, Kans., Director of Health Education

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D. John Turpin, 543 Church, Ann Arbor, Mich., Trainee, Indiana State Board of Health

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Sallie H. Windes, H. H. Lowrey Junior High School, Dearborn, Mich.

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Public Health Nursing Section

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Olivia Smythe, Tahlequah, Okla., Supervising Nurse, State Dept. of Health

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Frank W. Parker, Jr., M.D., C.P.H., 214 E. Buena Vista St., Santa Fe, N. Mex., Epidemiologist, State Dept. of Public Health

Unaffiliated

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Phoebe M. Kandel, Colo. State College of Education, Greeley, Colo., Professor of Nursing Education

P. A. Kibbe, M.D., State Board of Health, New Orleans, La., State Registrar of Vital Statistics

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Clara Mears, R.N., 805 Ohio St., Lawrence, Kans., County Public Health Nurse

Clifford R. Taylor, D.D.S., 1132 White, Ann Arbor, Mich., Trainee (Director of Dental Health Appointee for South Dakota)

STANDARD METHODS FOR THE EXAMINATION OF DAIRY PRODUCTS

CHANGES IN NEW EDITION

THE following are the most important changes in *Standard Methods of Milk Analysis* (new title *Standard Methods for the Examination of Dairy Products*) as approved by the Laboratory and Food and Nutrition Sections of the American Public Health Association at the Annual Meeting in Kansas City, Mo., October 25–28, 1938.

1. The Seventh Edition of this report is to include Bacteriological Methods prepared by a Committee from the Laboratory Section, Bioassay Methods for Vitamin D Milk prepared by a Committee from the Food and Nutrition Section, and Chemical Methods prepared by the Association of Official Agricultural Chemists.

2. The scope of the report has been broadened to cover Dairy Products, in general. The Ice Cream Section, which now includes methods for making bacterial counts for Plain Ice Cream only, is to be still further developed during the coming year in coöperation with the Joint Committee on Standard Methods for the Examination of Frozen Desserts maintained by the Laboratory, and the Food and Nutrition Sections to cover the broader field of Frozen Desserts. Methods for making Yeast and Mold Counts from butter are also included. A Referee on Sediment Tests for all dairy products is to be appointed.

3. Part I Bacteriological Methods is divided into eleven sections. The first five sections cover sampling, methods of making agar plate counts, direct microscopic counts, the methylene blue reduction technic and sediment tests. The four following sections describe methods for the isolation and identification of coliform bacteria, hemolytic streptococci, tubercle bacilli, and the organisms that cause undulant fevers, respectively. Section 10 includes the ice cream methods, and Section 11 the butter methods.

4. The text of the bacteriological portion of the report has been entirely rewritten and arranged in a more logical sequence. A detailed subject Index is to be prepared, in addition to the Table of Contents.

5. The following are the most important changes approved in the Standard Agar Plate Count technic:

(a) Beginning July 1, 1939, standard agar is to have the following composition and reaction:

Bacto-Tryptone	5 gr.	
Bacto-meat extr.	3 gr.	
Glucose	1 gr.	
Skim milk	10 c.c.	(Where dilutions are
Agar	15 gr.	greater than 1:10)
Reaction	pH 6.6 to 7.0	
Preferred reaction	7.0	

(b) While incubation at 37° C. (not 37.5° C.) is to be continued until laboratories doing milk work are more generally equipped with approved incubators, the variation in temperature permitted was placed at 35 to 37° C., rather than 35.5 to 37.5° C., as at present.

(c) As a result of the findings of various research workers, it is required that agar plates be counted under constant illumination and the use of the Quebec Colony Counter is strongly recommended.

(d) The recommendations regarding types of laboratory incubators and incubator rooms as given in the present (Sixth) edition are made mandatory so that the only incubators approved are the water jacketed and anhydric laboratory type incubators with low temperature heating units operating at temperatures only slightly in excess of 37° C.; and incubator rooms of proper construction.

(e) Specifications for pipettes, dilution bottles, non-absorbent closures, etc., have been drawn up in greater detail than previously.

(f) Methods have been developed for making more accurate rinse counts from glass and paper milk bottles that are nearly sterile.

6. The uses of the direct microscopic method and particularly its usefulness for the examination of pasteurized milk have been described in greater detail than previously. It is required that all agar plate counts be checked microscopically frequently enough to detect the presence of excessive numbers of

bacteria present in the milk and cream where they do not grow on standard agar plates incubated at 37° C. It is only by checking in this way that all samples containing excessive numbers of bacteria can be detected. A high class milk supply does not contain an excessive number of bacteria, either living or dead.

7. (a) The methylene blue thiocyanate tablets approved at the New Orleans meeting (1936), having been standardized and found satisfactory in actual use, are accepted as standard.

(b) Reference is made to the modified form of the methylene blue reduction technic now officially approved in England.

(c) No reference is made to the resazurin test as it is felt that further study must be made before the significance of the results secured by this technic will be evident.

8. Improvements have been made in the text covering the sediment technic. The suggested 1937 Connecticut State Standards are included.

9. Brilliant green lactose bile broth, sodium formate ricinoleate broth, violet red bile agar, and sodium desoxycholate agar are approved for use in detecting coliform bacteria in dairy products.

10. Methods for plating on blood agar and the use of Burri agar slants are given in the section on methods of detecting pathogenic, usually hemolytic streptococci. Cross reference is made to the report prepared by the Committee on Diagnostic Procedures and Reagents of the Laboratory Section which gives methods of identifying species of streptococci by cultural and serological procedures. These are to be used where exact identification of species is desired.

11. The tentative methods for the identification of tubercle bacilli in milk and cream as given in the *Year Book* for 1934–1935 are now included as standard methods.

12. The tentative methods for the identification of bacteria belonging to the genus Brucella as given in the *Year Books* for 1934–1935 and 1935–1936 are now included as standard methods.

13. Little change has been made in the section describing methods for making bacterial counts from plain ice cream. It is expected that this section will be rewritten in the near future in coöperation with the Committee on Standard Methods for the Examination of Frozen Desserts.

14. Directions for carrying out yeast and mold counts on butter are given for the first time. No directions for making sediment tests from butter are given as yet. These methods are under study in coöperation with referees working with similar methods for other dairy products.

15. The directions given in Part II for the Bioassay of Vitamin D milk are based on the directions for this method as given in the *U.S. Pharmacopoeia*, Supplement, p. 91, and are in harmony with the directions adopted by the Association of Official Agricultural Chemists.

It is expected that the new (Seventh) edition of the report will be in print during the early part of 1939.

COMMITTEES ON STANDARD METHODS FOR THE EXAMINATION OF DAIRY PRODUCTS

ROBERT S. BREED, *Chairman*
FRIEND LEE MICKLE, *Chairman*
Frozen Desserts
HENRY T. SCOTT, *Chairman*
Vitamin D Bio-assay of Milk

EMPLOYMENT SERVICE

The Employment Service will register persons qualified in the public health field without charge. Public health nurses are registered with the Nurse Placement Service, 8 South Michigan Avenue, Chicago, Ill., with which the Association coöperates.

Replies to these advertisements, indicating clearly the key number on the envelope, should be addressed to the American Public Health Association, 50 W. 50 Street, New York, N. Y.

Positions Available

WANTED—(a) County health commissioner; public health training and experience required; southeast. (b) Young physician, under 35, for position with state department of health; must be willing to take course of training before being assigned to duty. (c) Young public health man for interesting position in southwest; special training in either obstetrics or pediatrics desirable; woman eligible. (d) School nurse; college graduate, 30–40, with public health certificate; full charge in small town school system with total enrollment of 900; ability to launch sex education program for students and mothers important; minimum $1,700, increasing annually; immediately available, Chicago area. (e) Instructor in bacteriology and public health; degree in bacteriology from medical school required; state university school; considerable research. (f) City health commissioner; physician with minimum 5 years' experience required; one 40–45 with C.P.H. or M.P.H. preferred; $5,000; South. Write: **120**, Medical Bureau, Pittsfield Building, Chicago, Ill.

Positions Wanted

Physician, M.D., University of Virginia; excellent background, seeks position as health officer in well organized health department. **A388**

Physician, M.D., Class A medical school; M.S.P.H., University of Michigan, 1937; now serving as district state health officer, seeks full-time administrative position in city or county. **A367**

Physician, experienced in health administration of cities and states, will consider attractive opening in maternal and child health or health education. **A343**

Well qualified physician, with C.P.H. from Johns Hopkins; experienced as school physician and in college teaching, will consider city or county administrative position or teaching and student health service. **A383**

Physician, M.D., University of Cincinnati; with postgraduate training in venereal disease control, Johns Hopkins; now employed, is available as venereal disease control officer. **A363**

Physician, M.D., C.P.H., 2 years' experience as district health officer; anxious to do venereal disease control work or epidemiology. **A345**

Physician, M.D., A.B., 30 years city health department. Administrative, educational and research experience; also familiar with venereal disease work. **A295**

Physician, age 34; M.D., University of Wisconsin; M.P.H., Harvard; specializing in industrial hygiene, will consider general administration. **A342**

HEALTH EDUCATION

Well qualified woman in health education wishes position as health coördinator or health counselor. Has wide experience, and Ph.D. from New York University. **H236**

Young woman, M.A., Health Education, Teachers College, Columbia University; with splendid international experience, seeks position as director of health education with preference for New York City. **H369**

Young woman, M.S.P.H., University of Michigan, experienced in laboratory research and health education, is available for research or investigative work. **H303**

Woman, M.D., Boston University; special work Columbia and Massachusetts Institute of Technology; one year's experience in state hospital; interested in psychiatry, desires position in the east in hospital for mental diseases or industrial school. **H247**

MATERNAL AND CHILD HEALTH

Woman physician, graduate of University of Iowa, who has directed state bureau of maternal and child health, now employed, will consider another position. **C318**

Woman physician, with excellent medical training and background of public health nursing experience, seeks position in maternity and infancy work. **C376**

LABORATORY

Bacteriologist and pathologist with wide administrative experience; Ph.D., Brown University; will consider leading position in this field. **L371**

(Continued on p. 1450)

Experienced laboratory director with background of dairy products manufacture and research in control methods; University of Wisconsin, M.S. and Ph.D.; desires administrative position with food manufacturing or processing industry, or association with health department doing routine and research work in food control. **L381**

Capable research worker; Ph.D., trained at University of Southern California and Pasteur Institute, seeks position directing laboratory, in research work or field investigation. Has taught bacteriology, directed state hygiene laboratory and hospital laboratories. **L315**

Young woman, A.B., Bates College; several years' experience in various state laboratories, desires position as bacteriologist. **L253**

Bacteriologist with training at C.C.N.Y., N.Y.U. and Cornell Medical College, wishes laboratory position in bacteriology; east or southwest. **M351**

Young woman, A.B., major in bacteriology; 9 years' experience; now employed in a clinical laboratory; desires position in bacteriology or serology in a health department laboratory or in research. **L382**

Laboratory technician, B.Sc. degree; with experience in Army, state public health laboratory, and U. S. Public Health Service field laboratory, seeks position in medical school or university. **L379**

Bacteriologist and serologist, A.B., University of Kansas; at present bacteriologist in charge, public health laboratory; will consider another position. **L390**

SANITARY ENGINEERING

Sanitary engineer; courses at Rutgers University; with 17 years' experience in design, research and construction of water and sewage plants, as well as aerial pollution surveys; desires position, preferably research. **E321**

Graduate sanitary engineer with service under U.S.P.H.S. and state departments of health, especially interested in filtration plant design and operation and shellfish sanitation, seeks employment. **E356**

Public Health engineer, B.S. in Sanitary Engineering from Massachusetts Institute of Technology, experienced in Massachusetts, Connecticut and Kentucky, seeks position as sanitary or public health engineer with health department. **E380**

Experienced sanitary engineer, graduate of Massachusetts Institute of Technology, seeks responsible position. **E372**

MISCELLANEOUS

Young man, age 27, S.B., Massachusetts Institute of Technology; A.M., Boston University; M.S. in Biochemistry, University of Michigan; 2 years' graduate work in public health; experienced in chemical, bacteriological and biochemical research; teaching experience in college hygiene, desires a position in a food industry involving research or control. **M374**

Experienced teacher in bacteriology and public health; Ph.D., Cornell; now professor in Grade A medical school, will consider teaching, executive or administrative position. **M327**

Experienced public health nurse executive, Fellow A.P.H.A., is available for responsible position. **N384**

Industrial hygiene engineer, B.S. in Chemical Engineering, S.M. in Sanitary Engineering (Industrial Hygiene) from Harvard Graduate School of Engineering; field experience; desires position with public health department or private health agency. **M391**

SITUATIONS WANTED: (a) *Young physician:* B.S., M.D. degrees, leading schools; graduate courses in physiologic hygiene, community health problems and epidemiology, hygiene and public health; age 31; will go anywhere. (b) *Young woman physician;* extensive graduate training in pediatrics; 4 years, child hygiene division, state health department; several years, private practice pediatrics; wishes to return to full-time public health work. (c) *Public health nurse,* B.A. degree; graduate of one of country's leading training schools; postgraduate training public health and hygiene, state university. (d) *Health educator;* graduate nurse, with B.S. degree; social service certificate; 3 years' experience social service; 4 years, industrial nursing; 10 years, director of health council. (e) *Bacteriologist,* A.B., M.S. degrees, state university; ten years, city bacteriologist and chemist, city health department. WRITE: 121, Medical Bureau, Pittsfield Bldg., Chicago, Ill.

POSITIONS AVAILABLE

District Health Officer; 3 Vacancies; Salary $4,750. Applicants must have been residents of the City of New York for 3 years at the time of *appointment*. Duties: Administrative charge of the activities of Health Department in a district of about 250,000 population. Requirements: M.D. degree, 1 or more years of graduate training in public health, and 2 years' experience as a health officer or 3 years' experience in a responsible administrative position of the type which will fit one to be a health officer. Applications: Open December 7 to 28, 1938. For further details apply to Municipal Civil Service Commission, Municipal Bldg., New York City.

NEWS FROM THE FIELD

DELTA OMEGA OFFICERS

IN connection with the American Public Health Association meeting at Kansas City, Delta Omega, the honorary society in Public Health, held its annual meeting on October 25. Of the 749 living members, 90 were present. The society has six chapters in institutions offering courses which lead to degrees in public health.

The officers for the ensuing year are: Dr. John Sundwall, of Ann Arbor, Mich., President; Dr. M. E. Barnes, of Iowa City, Ia., Vice-President; and Dr. Clarence L. Scamman, 41 E. 57th St., New York City, Secretary-Treasurer.

A NEW FORM OF BIOLOGICAL ABSTRACTS FOR 1939

A NEW plan for the publication of *Biological Abstracts* beginning with 1939 has been adopted by the Board of Trustees. It provides for the usual monthly issue of abstracts covering promptly a definite list of journals in all fields of biology. To meet the demands of biologists who wish to subscribe for a special group of subjects, the whole issue will be broken up into five parts:

I. *General Biology,* to include General Biology, Biography-History, Bibliography, Evolution, Cytology, Genetics, Biometry and Ecology.

II. *Experimental Animal Biology,* to include Animal Physiology, Nutrition, Pharmacology, Pathology, Anatomy, Embryology, and Animal Production.

III. *Microbiology and Parasitology,* to include Immunology, Bacteriology, Viruses, Parasitology, Protozoölogy, and Helminthology.

IV. *Plant Sciences,* to include Phytopathology, Plant Physiology, Plant Anatomy, Palaeobotany, Systematic Botany, Agronomy, Horticulture, Forestry, Pharmacognosy, and Pharmaceutical Botany.

V. *Animal Sciences,* to include Palaeozoölogy, Parasitology, Protozoölogy, Helminthology, Systematic Zoölogy, and Economic Entomology.

Subscribers to any of these parts will receive the indexes to the whole of Biological Abstracts.

To insure close contact on the part of biologists in every field with this service being conducted for them, the National Societies concerned are being invited to set up committees to help develop standards and editorial policies in their respective fields.

Biological Abstracts exists on a self-supporting basis, operates without profit, and sells its service at cost. For further information apply to the Business Manager, *Biological Abstracts,* University of Pennsylvania, Philadelphia, Pa.

"TYPHOID MARY" DIES OF STROKE AT 68

THE first carrier of typhoid bacilli identified in America and consequently known as Typhoid Mary, Mary Mallon, died November 11 in Riverside Hospital on North Brother Island, New York.

With the exception of a 5 year period from 1910 to 1915, this isolated spot in the East River had been her home since 1907, when she was discovered by George A. Soper, engineer and sanitary expert, and found to be a veritable peripatetic breeding ground for the bacilli. Fifty-seven original cases and 3 deaths had been attributed to her.

PSITTACOSIS ORDINANCES IN BALTIMORE

A CITY ordinance has been enacted in the City of Baltimore in order to prevent the reappearance of psittacosis or parrot fever.

This ordinance prohibits the importation, breeding, sale or distribution of birds of the psittacine family.

VIRGINIA ANNOUNCES FREE ANTI-SYPHILIS DRUGS

THE Virginia State Health Department has announced that free anti-syphilitic drugs are available to the medical profession for the treatment of all cases of syphilis, regardless of the patient's economic status. *The Virginia Medical Monthly* reports that health officers in cities and counties served by a full-time health department have been furnished a supply of drugs for distribution to hospitals, clinics and private physicians in their respective territories.

Physicians practising in territories not served by a full-time health department are to forward their requisitions to the State Health Department.

CHRISTMAS MEETING OF CANADIAN PUBLIC HEALTH ASSOCIATION

THE Laboratory Section of the Canadian Public Health Association will hold its Seventh Annual Christmas meeting in Toronto, December 19 to 21.

John Gordon, M.D., Ph.D., Professor of Hygiene and Preventive Medicine of Harvard University, will be the guest speaker.

HOSPITAL FOR DRUG ADDICTS

THE U. S. Public Health Service Hospital for drug addicts at Fort Worth, Texas, was dedicated recently.

This is the second such institution in the country, and was built at a cost of approximately $4,000,000.

NEW TYPHUS ANIMALS

SIX new species of animals native to America have been added to the list of those susceptible to endemic typhus fever, and therefore possible intermediate reservoirs of infection which may be tapped by insects and thus transferred to man, the U. S. Public Health Service reported.

The gray and fox squirrel, the cottontail and swamp rabbit, the chipmunk and the skunk have been found to match the typhus classification of the woodchuck, flying squirrel, opossum, and the meadow, whitefooted, oldfield, cotton and golden mouse and the wood, cotton and rice rat.

MICHIGAN PUBLIC HEALTH ASSOCIATION ELECTS OFFICERS

NEW officers for the forthcoming year were elected as follows by the Michigan Public Health Association at its recent annual meeting:

President—John Lavan, M.D., Grand Rapids

Vice-President—M. R. Kinde, M.D., Battle Creek

Secretary-Treasurer — Marjorie Delavan, Lansing

Representative on A.P.H.A. Governing Council—Don W. Gudakunst, M.D., Lansing

TEXAS PUBLIC HEALTH ASSOCIATION ELECTS OFFICERS

AT its recent Annual Meeting the Texas Public Health Association elected the following officers to serve for the next year:

President—Walter Kleberg, M.D., Galveston

1st Vice-President—Graham Hatch, Dallas

2nd Vice-President—Mildred Garrett, R.N., Austin

3rd Vice-President—C. B. Young, M.D., Tyler

Secretary-Treasurer—P. A. Kerby, Austin

WEST VIRGINIA PUBLIC HEALTH ASSOCIATION ELECTS OFFICERS

AT its recent Annual Meeting, the West Virginia Public Health Association elected the following officers to serve during the coming year:

President—Edwin Cameron, M.D., Morgantown

Vice-President—Bruce H. Pollock, M.D., Point Pleasant

Second Vice-President—Claude A. Thomas, M.D., Martinsburg

Secretary—Harry K. Gidley, Charleston

MISSISSIPPI VALLEY MEDICAL SOCIETY 1939 ESSAY AWARD

THE Mississippi Valley Medical Society offers $100, a gold medal, and a certificate of award for the best unpublished essay on a subject of interest and practical value to the general practitioner of medicine. Entrants must be members of the American Medical Association. The winner will be invited to present his contribution before the next annual meeting of the Mississippi Valley Medical Society at Burlington, Iowa, September 27, 28, 29, 1939, the Society reserving the exclusive right to first publish the essay in its official publication — the *Mississippi Valley Medical Journal (Incorporating the Radiologic Review)*.

Contributions must not exceed 5,000 words, be typewritten in English in manuscript form, submitted in 5 copies, and must be received not later than May 1, 1939. Further details may be secured from Harold Swanberg, M.D., Secretary, Mississippi Valley Medical Society, 209–224 W. C. U. Building, Quincy, Ill.

MICHIGAN BUREAU OF PUBLIC HEALTH NURSING

A BUREAU of Public Health Nursing has been established as one of the administrative divisions of the Michigan Department of Health.

Miss Helen Bean, Public Health Nursing Consultant with the Division of Domestic Quarantine of the U. S. Public Health Service, has been appointed Director of this new bureau.

SYLVATIC PLAGUE LABORATORY

THE University of California is to be equipped with a laboratory for the study and control of sylvatic plague.

This work will be under the leadership of Dr. Karl F. Meyer, Director of the George Williams Hooper Foundation of the University, and Chairman of the Committee on Sylvatic Plague of the Western Branch A.P.H.A.

ARKANSAS EMPLOYS DENTISTS

FIFTEEN part-time dentists have been employed by the Arkansas State Board of Health to conduct dental health programs in full-time county units.

MORE PUBLIC HEALTH NURSING IN 1937

SEVEN and one-half per cent more public health nurses were employed in 1938 than in 1937, according to a report released by the U. S. Public Health Service and the U. S. Children's Bureau.

These statistics, collected through the state health departments, show that 23,271 public health nurses were employed in 1938 as compared with 21,656 in 1937.

NATIONAL RESOURCES COMMITTEE REPORTS

THE National Resources Committee has reported on drainage base problems and programs and has listed recommendations for construction of pollution abatement facilities in various parts of the United States.

The number of these projects totals 3,484 and the estimated cost is $667,000,000. A tabulation of the projects by area with their estimated cost is available through the office of the American Public Health Association, 50 West 50th Street, New York, N. Y.

JANUARY 1938 JOURNAL NEEDED

ASSOCIATION stock of the January, 1938, issue of the *American Journal of Public Health* is exhausted. The office will pay postage on any copies from members or subscribers. Address: American Public Health Association, 50 West 50th Street, New York, N. Y.

PUBLIC HEALTH COURSE FOR DENTISTS

COLUMBIA University School of Dentistry and Oral Surgery, during the current school year, is offering a course in public health for dentists.

This course, planned to provide dentists with essential training in public health, leads to a master of science degree.

PNEUMONIA SERUM FOR BALTIMORE INDIGENTS

INDIGENT hospital patients in the City of Baltimore have been supplied pneumonia serum, made possible by an appropriation to the Health Department.

Up to October 1, the Bureau of Laboratories of the Baltimore City Health Department distributed 5 million units of this serum at a cost of approximately $2,000 among 11 hospitals for the treatment of 37 pneumonia patients. Among the 37 persons receiving the serum, there were 10 deaths and 27 recoveries.

SOUTHERN MEDICAL ASSOCIATION

AT the Southern Medical Association meeting, held in Oklahoma City recently, Arthur T. McCormack, M.D., of Louisville, Ky., immediate Past-President of the American Public Health Association, was elected President-elect of the Southern Medical Association; and Philip E. Blackerby, M.D., of Louisville, Ky., was elected Secretary-Treasurer.

STATE CONFERENCE ON PUBLIC HEALTH

AMONG the speakers scheduled to speak at the State Conference on Public Health, for Springfield, Ill., November 30 and December 1, were: Wilson G. Smillie, M.D., of New York, Harry S. Mustard, M.D., of New York, Adolph S. Rumreich, M.D., of Washington, Nels Nelson, M.D., of Massachusetts, Gaylord Anderson, M.D., of Minnesota, Arthur T. McCormack, M.D., of Kentucky, Sophie Nelson of Boston, and C. C. Applewhite, M.D., of the U. S. Public Health Service, Chicago.

CHANGES IN NEW YORK STATE DEPARTMENT OF HEALTH

The following is a list of promotions and new assignments to the staff of the New York State Department of Health, which have been effected during October:

Ernest L. Stebbins, M.D.* Assistant Commissioner in Charge of Preventable Diseases. James E. Perkins, M.D., Dr.P.H.*—Director of Communicable Diseases.

Paul A. Lembcke, M.D.†—Epidemiologist in the Division of Communicable Diseases.

The following district officers have been appointed and their assignments are indicated:

Samuel Hyman, M.D.,† Utica
Franklyn B. Amos, M.D.,† Amsterdam
Harry L. Chant, M.D.,† Middletown
Hollis S. Ingraham, M.D.,† Kingston

Frank E. Coughlin, M.D.,* Albany, has become District State Health Director, with supervision over the Eastern New York State districts.

Robert L. Vought, M.D., Jamestown, Assistant District State Health Officer, has been placed in charge of the Jamestown subdistrict office.

Gordon R. Gray, M.D., Batavia, Assistant District State Health Officer, has been placed in charge of the Batavia subdistrict office.

The following physicians have been appointed as Assistant District State Health Officers:

Wendell R. Ames, M.D.,† Lester Levingson, M.D.,† Bernard M. Blum, M.D.,† Walter C. Levy, M.D.,† John J. Bourke, M.D.,† Wilfred L. J. McDonald, M.D.,† James C. Boland, M.D.,† James J. Quinlivan, M.D.,† Simon J. Gormley, M.D., William M. Smith, M.D.,† Harvey S. Kinne, M.D.,† Ralph P. Vincent, M.D.

The following physicians have been appointed as Epidemiologist-in-training:

Robert Y. Gromet, M.D., Thistle McKee, M.D.

* Fellow A.P.H.A.
† Member A.P.H.A.

PERSONALS

Central States

CARL A. WILZBACH, M.D.,* has been appointed Health Commissioner of the City of Cincinnati, Ohio. Dr. Wilzbach has been the Director of Public Health Education of the Cincinnati Public Health Federation.

DR. JOHN ESSER, of Perham, Minn., has been appointed a member of the Minnesota State Board of Health, to succeed DR. SAMUEL Z. KERLAN, of Aitkin.

DR. ALBERT G. SCHULZE, of St. Paul, Minn., has been appointed a member of the Minnesota State Board of Health.

ANTONY TRIOLO, M.D.,† formerly of Philip, S. D., has been appointed Health Officer of Pennington County, succeeding DR. HORACE D. LIEN, of Rapid City, who has resigned to join the staff of the Fort Bidwell Hospital, Fort Bidwell, Calif.

Eastern States

FRANKLYN B. AMOS, M.D.,† has been appointed provisionally to the position of District Health Officer, in charge of the Amsterdam, N. Y., district, comprising Fulton and Montgomery Counties.

ALBERT E. AUSTIN, M.D.,* of Old Greenwich, Conn., former Health Officer of Greenwich, was elected to the House of Representatives as a Congressman in the November election.

DR. MARTHA WILSON MACDONALD, formerly in charge of the Children's Division of the Department of Psychiatry at Michael Reese Hospital, Chicago, Ill., has been appointed Director of a new child guidance clinic in New Orleans.

HELEN C. MANZER, PH.D.,† formerly Director of Nursing Education, New York University, is now Associate Professor of Education at the University.

HALSEY J. BALL, M.D.,* Health Officer of the Utica District, including Herkimer, Madison, and Oneida Counties, has retired from active service. He was associated with public health work from 1892.

HAROLD J. CONN, PH.D., Chief of the Department of Research in Soil Bacteriology in the New York Agricultural Experiment Station at Geneva, N. Y., has taken up special work at the Scripps Institution at the University of California, Berkeley, Calif., where he will study the growth of the soil bacteria in synthetic or prepared soils.

GORDON R. GRAY, M.D., C.P.H.,† of Amsterdam, N. Y., Assistant District Health Officer, is now in charge of the Batavia, New York, sub-district with jurisdiction over Orleans, Genesee, and Wyoming Counties.

RICHARD P. STRONG, M.D., for 25 years Professor and head of the Department of Tropical Medicine, Harvard Medical School, Boston, Mass., has retired from active teaching and has become Professor Emeritus.

Southern States

IRVIN ABELL, M.D., of Louisville, Ky., President of the American Medical Association, received, in a ceremony on November 5, the Laetare Medal of the University of Notre Dame, Notre Dame, Ind., awarded annually to an outstanding Catholic layman.

STEPHEN J. BEEKEN, M.D., for some months Assistant Health Officer for the Rockbridge County, Va., Health District, has been appointed Health Officer of the Russell-Tazewell Health District, with headquarters at Richlands.

DR. WILLARD W. GRIGGS has been appointed Health Officer of the Dicken-

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* Fellow A.P.H.A.
† Member A.P.H.A.

son-Wise Health District, with headquarters at Norton, Va.

CLARENCE PORTER JONES, JR., M.D., has been appointed Assistant to ROBERT P. COOKE, M.D.,† of the Rockbridge County Health Department, Lexington, Va.

DR. GEORGE BOYCE LYNCH, of Brevard, N. C., has been appointed Health Officer of Transylvania County.

JOHN G. MCNIEL, M.D., has been appointed Health Officer of the Montgomery County, Va., Health District, with headquarters at Christiansburg, Va. He succeeds WILLIAM M. FULLER, M.D.,† who is enrolled at the Johns Hopkins School of Hygiene and Public Health, Baltimore, Md.

ELLIS S. TISDALE, S.B.,† of Charleston, W. Va., for 22 years Sanitary Engineer in the West Virginia State Department of Health, has been granted an indefinite leave of absence to accept an appointment with the U. S. Public Health Service in connection with the stream pollution study of the Ohio River Basin. J. B. HARRINGTON, for several years Assistant Sanitary Engineer in West Virginia, has been named to succeed Mr. Tisdale as Director of the Sanitary Engineering Division.

HUNTINGTON WILLIAMS, M.D.,* has been reappointed Commissioner of Health of Baltimore, Md., for a term of 7 years.

L. L. WILLIAMS, M.D.,† Senior Surgeon, Malaria Investigations, U. S. Public Health Service, Washington, D. C., gave lectures on malaria at the University of North Carolina, Chapel Hill, N. C., October 31 and November 1.

MARK V. ZIEGLER, M.D.,† Senior Surgeon and Regional Consultant, U. S. Public Health Service, Washington, D. C., gave a lecture and showed a film on the work of the U. S. Public Health Service at the University of North Carolina, Chapel Hill, N. C., November 8.

Western States

CHARLES L. COYLE, M.D.,† of Marshfield, Ore., has been appointed Health Officer of Coos County.

DR. FREDERICK SYDNEY HANSEN,† formerly of Pendleton, Ore., has been appointed Health Officer of Multnomah County.

ALFRED H. MACLAREN, M.D.,† formerly of Portland, Ore., has been appointed Health Officer of Umatilla County.

DR. PETER H. ROZENDAL † formerly of Lake Preston, S. D., has been appointed Health Officer of Klamath County, Ore.

Ecuador

HENRY HANSON, M.D.,* of Guayaquil, Ecuador, on the staff of the Pan American Sanitary Bureau, was recently decorated by the Ecuador Government with the Order of Merit, recognizing his services in connection with bubonic plague. Dr. Hanson was formerly State Health Officer of Florida.

DEATH

ELLA PHILLIPS CRANDALL, of New York, N. Y., died October 25. Miss Crandall became an instructor in public health nursing at Teachers College in 1910, and 2 years later, when the National Organization for Public Health Nursing was formed, became its first Executive Secretary. In 1920 she resigned from the N.O.P.H.N. and in 1921 became Director of a special committee to study community organization for health protection as worked out under the Association for Improving the Conditions of the Poor in New York City. At the time of her death Miss Crandall was Director of the Payne Fund, of New York.

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* Fellow A.P.H.A.
† Member A.P.H.A.

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Public Health
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A Century in Arrears
WOLMAN

The Health of the Nation
PARRAN

Industrial Hygiene
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RECENT ADVANCES IN THE SCIENCE OF NUTRITION

IV. Some Accomplishments of Vitamin D Research

● By 1932, many of the basic facts concerning vitamin D had been clearly established (1). At that time, the International system of denoting vitamin D unitage had not been universally adopted. However, the antirachitic potencies of a wide variety of biological materials had already been explored; the need for standardization of assay methods was appreciated; the minimum requirement of infants and children for vitamin D had been estimated; and the probable "multiple" nature of the vitamin definitely indicated.

Since 1932, the importance of vitamin D in human nutrition and the challenge of the many unanswered questions regarding this factor have served to stimulate research both in the clinic and in the laboratory. It is of interest to note some of the outstanding advances made in our knowledge of vitamin D which the past six years have brought.

It is now known that at least ten different sterol derivatives are capable of exhibiting the physiologic properties of vitamin D. Of these, only two may be considered of prime importance as far as practical application in human nutrition is concerned, namely, the activation products of ergosterol and 7-dehydro-cholesterol. The remaining forms are of considerable theoretical importance in that their identification has completely established the multiple nature of vitamin D (2).

Further research has also defined more closely not only the vitamin D requirements of normal infants and children, but also of premature infants and those peculiarly susceptible to rickets. Apart from conditions of pregnancy and lactation, the possible requirement of the human adult for vitamin D is still not known (3). The International system of expressing vitamin D potency has been universally adopted; bioassay methods have been standardized (4); and last but not least, a high degree of standardization has been attained, not only in regard to the antirachitic potency of vitamin D preparations, but also as to the extent to which the vitamin D contents of certain foods should be increased by the various means available (3).

While some foods, including some canned foods of marine origin, are valuable food sources of vitamin D (5), no combination of common foods—as they occur naturally—can supply the demands of the infant and child for the antirachitic factor. Although there is no reason as yet to believe that the normal adult requirement for vitamin D is not largely fulfilled by a varied diet of protective foods, it is definitely known that the infant and child dietaries must be supplemented with or fortified by vitamin D.

It is in the formulation of basic diets for either infants or adults that commercially canned foods should prove especially valuable. Among the great variety of American canned foods are included special foods for use in child and infant feeding which, when properly supplemented or fortified, should meet the nutritive demands of those stages of life. For the normal human adult—whose diet hardly requires special supplementation—there are a large number of canned foods available which readily permit formulation of a varied diet of the so-called protective foods.

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(1) 1932. J. Amer. Med. Assn. 99, 213 and 301.
(2) J. Amer. Med. Assn. 110, 2150.
(3) Ibid. 110, 703 and 1179.
(4) 1936. U. S. Pharmacopeia, XI Decennial Revision.
(5) 1935. J. Home Econ. 27, 658.
1933. Science 78, 368.

We want to make this series valuable to you, so we ask your help. Will you tell us on a post card addressed to the American Can Company, New York, N. Y., what phases of canned foods knowledge are of greatest interest to you? Your suggestions will determine the subject matter of future articles. This is the forty-third in a series, which summarize, for your convenience, the conclusions about canned foods reached by authorities in nutriti nal research.

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